WESTERN INDUSTRY

• Motley ladies jewelry in New Mexico becomes a production line industrial operation. For details see page 5.

IN THIS ISSUE: Solving Basing Point Problem by New Laws Not Easy; Exploring Possibilities of Light Metals Welding; Incentive Management Works When You Work at It; Western Pulp Mills Solve Stream and Air Pollution; Infra Red Heating Changes Cold Barn into Warm Working Spot; West's Ingenuity Challenged by Aircraft Program; How Much It Costs to Ship by Motor Truck

Thirty-Five Cents VOLUME XIV NUMBER 2 February, 1949

BARRELS OF HIGHWAYS FOR PACIFIC ISLES

WHETHER it's garden-fresh peas, kitchen stoves, or asphalt highways by the barrel—Cabco containers *protect.* They are job-engineered for the task at hand, lightweight for shipping economy, strong for maximum protection. Cabco containers are easy to handle, convenient to store. They are made by the West's oldest, foremost manufacturer of wooden containers.

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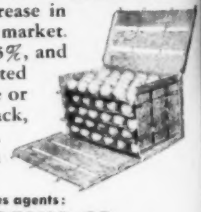

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for instance *... the Uarco Representative may suggest Speed-O-Forms. In five seconds, Speed-O-Forms turn any typewriter into a continuous billing machine . . . the girl has only to type. Speed-O-Forms are consecutively numbered and varicolored for easy distribution and filing.*

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This Month in WESTERN INDUSTRY

VOLUME XIV FEBRUARY, 1949 NO. 2

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Front Cover

The imperative call for industrialization even reaches the primitive Navajo reservation work benches in New Mexico. Now their skilled craftsmanship in silver, turquoise and petrified wood jewelry is being employed in a full-fledged production line at Maisel's Indian Trading Post in Albuquerque.

from castings to

Left to right . . . John Babros, Nicholas Buchanan, of G. P., and George McDonald, production superintendent for the Macaulay Foundry Co., talk over some of the technical details involved in the casting of engine blocks. In the recent Indianapolis Speedway event, the first and second cars to cross the finish line had engine blocks that were manufactured by this company.

checkered flag

G. P. Lubricants Help Make These Engines Winners

● The first three winners at Indianapolis Speedway last year give Mobiloil added fame as a lubricating oil, but not everyone knows that these engines also *started* in a plant lubricated with G. P. Products.

This is the Macaulay Foundry in Berkeley, whose products include castings of engine blocks for Offenhauser racing engines. These power plants, that won for Maury Rose and Bill Holland last year, must stand terrific temperatures and pressures, so their production must be under the most exacting conditions.

Equipment in this plant has been lubricated with Gargoyle Products for ten years, and the importance of this to equipment performance is summarized by Macaulay's L. H. Abbott, as follows:

"Molten iron won't wait for a broken air stream, so our air compressors *must* perform perfectly at all times. Since using Gargoyle D. T. E. Oil we've had nothing but dependable service. Sovarex grease also assures us continuous work from our heavy shakers, another important piece of equipment in a foundry."

You can have the same assurance of correct lubrication for your plant equipment... or your trucks... when you have experienced G. P. Lube Engineers make recommendations from the complete line of Mobil and Gargoyle Products. Such G. P. preventive maintenance programs have made substantial savings for many Pacific Coast firms, both in lubrication and upkeep costs. For complete information call your nearest G. P. branch or distributor.

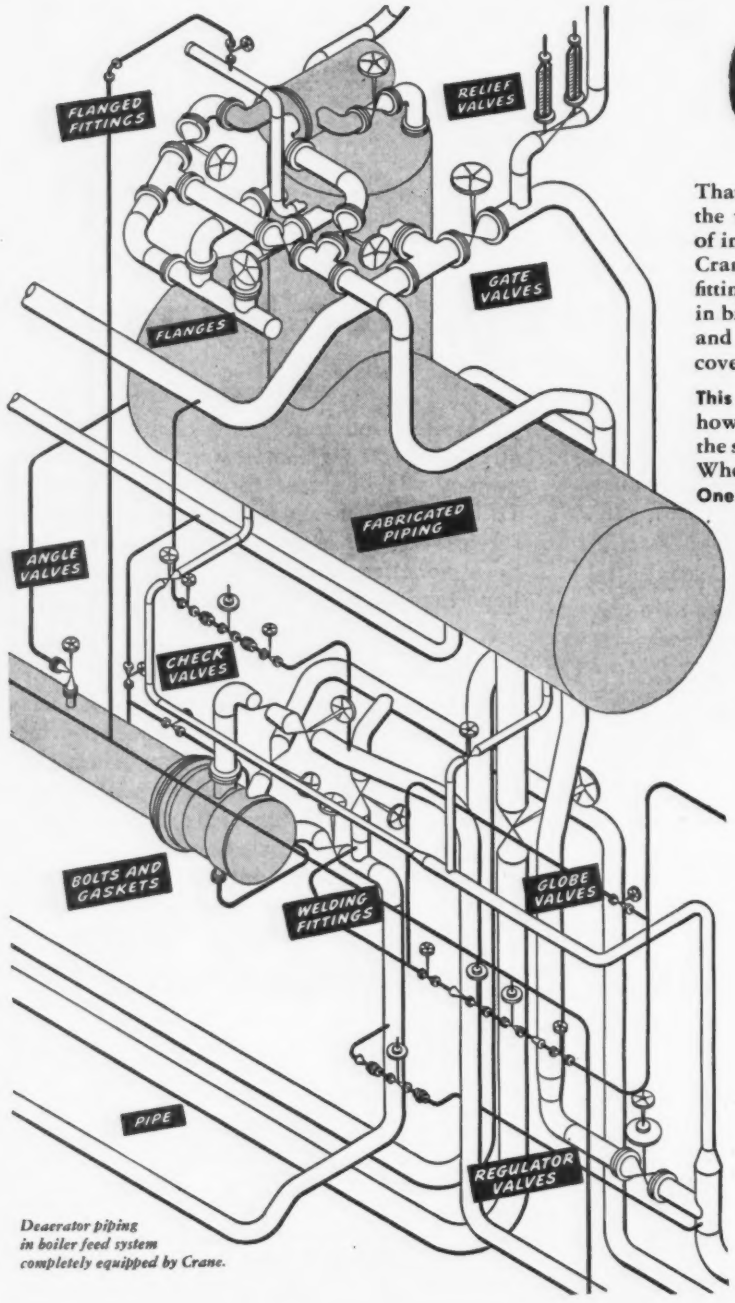
GENERAL PETROLEUM CORPORATION

(A Socony-Vacuum Company)

Here is the battery of seven air compressors that are used by the Macaulay Foundry Co. in the manufacture of precision grey iron castings for industrial purposes. Gargoyle D.T.E. heavy-medium oil is used exclusively in these machines to assure continuous, dependable operation.

Mobiloil
SOCONY-VACUUM

Everything in piping...for every need ...on one order to CRANE



Deaerator piping in boiler feed system completely equipped by Crane.

ONE SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY

That's the kind of service you get from Crane, the world's leading manufacturer and supplier of industrial piping equipment. "Everything" at Crane includes an unequalled selection of valves, fittings, fabricated piping, pipe and accessories—in brass, iron, steel and alloys. One catalog . . . and one order to your nearest Crane Branch cover whatever is needed for the job.

This Deaerator Piping, for example, illustrates how completely Crane supplies everything for the system, regardless of the fluids to be handled. When you standardize on Crane, you depend on **One Source of Supply** broad enough to simplify every piping procedure. You get better installations . . . avoid needless delays . . . by placing **Undivided Responsibility** on Crane for materials. And for **Highest Quality** in every piping item, specify Crane Quality—unsurpassed for more than 90 years.

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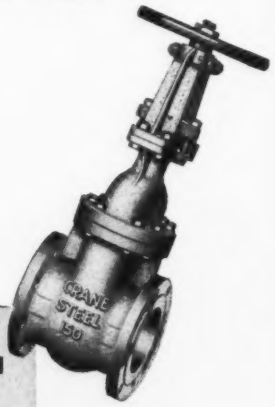
FOR TOUGH STEAM SERVICES *up to 750 deg. F., and for water, oil, air, gas and other non-lubricating liquids up to 500 deg. F., Crane recommends No. 47XR 150-pound Cast Steel Wedge Gate Valves. Designed for tight seating with long-lasting Exelloy to Nickel Alloy. Screwed, flanged or welding ends. Sizes: 2 in. and larger. See your Crane Catalog, p. 304.*



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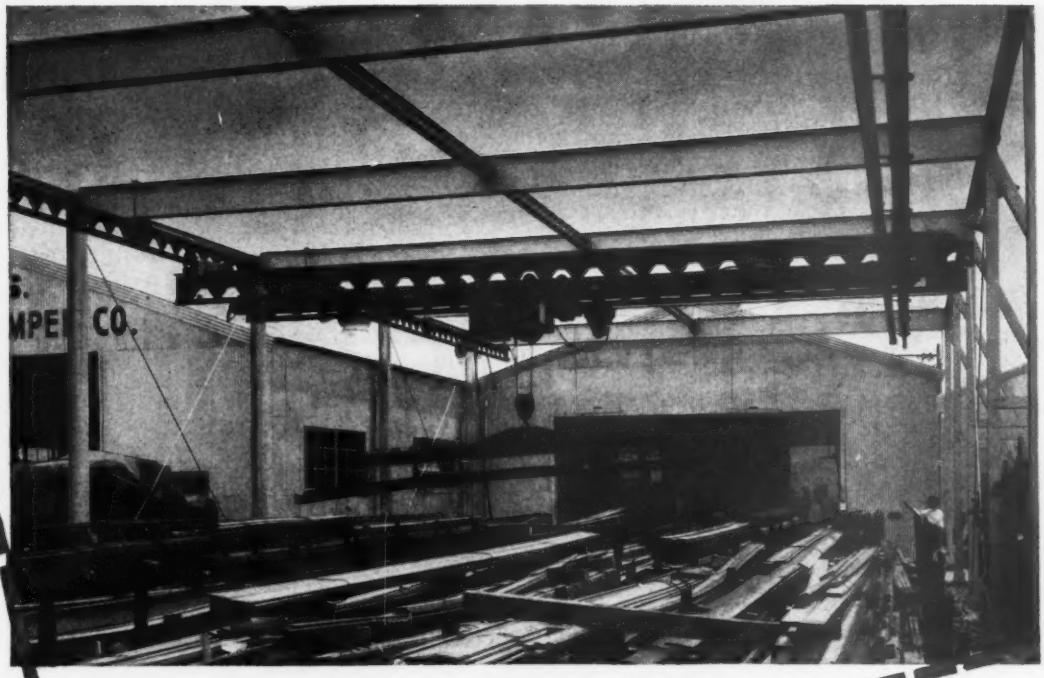
CRANE

FOR EVERY PIPING SYSTEM

WHITING TRAMBEAM



REDUCES MATERIALS-HANDLING COSTS

Whether you need a simple monorail and carrier, or a completely integrated system of cranes, monorails, and spurs, Whiting Trambeam can provide the exact system best suited to your individual plant. You can start with a small unit—then gradually expand it as increased needs arise—without sacrificing any part of your initial investment.

Whiting Trambeam is the result of combining the engineering talents and manufacturing facilities of two great organizations—Whiting Corporation and Spencer & Morris—toward better methods of materials handling. Today, this equipment is producing amazing results. We invite you to investigate what we have done for others.

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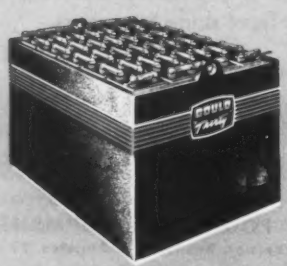
Only GOULD Has It!

Gould uses the Metalloscope to photograph high magnifications of the structure of cast lead connectors, parts and grid frames.

A modern research laboratory with pilot manufacturing plant where advance-design batteries are constantly created—and proved before production.

The Metalloscope, a combination high-powered microscope and camera, is helping Gould scientists find the answers to age-old lead casting problems. With it, the complex crystalline structure of lead castings has become an open book. As a result, information rapidly becoming available points the way to even stronger, electrically more efficient grid frames, posts, straps and connectors. For better batteries always, choose GOULD—FOR FIFTY YEARS THE CHOICE OF ENGINEERS.



The Gould "Thirty"—America's Finest Industrial Truck Battery!

GOULD

STORAGE BATTERY CORPORATION

Including the Storage Battery Division of Philco Corporation

TRENTON 7, NEW JERSEY

Always Use Gould Automobile and Truck Batteries

In Our Mail Box

We're Not So Backward

Editor, Western Industry:

I have read with interest the article dealing with the very great value to industry of an applied research organization designed to obtain solutions for technological problems encountered by small business or by larger companies in fields somewhat removed from their normal line.

I agree with the statements made in this article concerning the value of this type of organization and I have found that industrial research conducted by independent teams of scientific personnel is of value in our own development program where it is desired to manufacture a product for a specific application, but where the necessary equipment is not readily obtainable or is more expensive than can be justified. In this case, our company has in the past made use of industrial research institutes which were already active in the field in question. Results have been satisfactory in the majority of the projects assigned.

It is necessary in the direction of such research work, however, that close supervision be maintained by the sponsor to provide the institute with expert knowledge and evaluation as the development progresses.

The future of research in the West appears from my point of view to be very good. I do not feel that this section is backward in any way as compared to the other areas of the United States and believe continued expansion in the country as a whole will be reflected in increased Western research. The population trends of the present day tend to increase the business opportunities in the West at the expense of the more thickly populated areas and the demand for research must also increase in proportion. It is probable for these two reasons that research in the West will show greater advances in relation to the rest of the country than has ever been the case before.

P. E. LAKIN
Vice-President Marketing
Shell Oil Company.

Hydro vs. Coal

Editor, Western Industry:

Regarding the feasibility of building steam electric power plants as against hydro-electric plants, there is no question but what the capital expenditures required for hydro-electric plants would be far in excess of those required for steam generating plants. That fact is a well recognized principle.

In addition to this, however, I feel that for many reasons coal can also be fully competitive to both gas and oil. This is particularly true where plants are operating on gas, and on an interruptible rate basis where they have been subject to, and have experienced loss in operating time, due to the lack of availability of gas for fuel.

Research on the storing of coal has made splendid progress in recent years, so that storage is no longer a serious problem. This fact now insures continuous operation for any plant, including any period within which a rail or coal strike might occur.

There is much to be accomplished yet, of course, before the use of coal for industrial purposes on the West Coast can become a reality. Adjustment of freight rates, acquisition of coal burning equipment and storage facilities, are some of the problems which will have to be met.

However, these hurdles can be overcome, and with the tremendous reserves of high quality bituminous coal that are available in Utah, it would seem that West Coast industries should

(Continued on page 13)

EDITORIAL COMMENT

More Western Area Markets Needed

IT IS stretching the imagination a bit — quite a bit in fact — to picture the chambers of commerce in the big metropolitan centers of California, Oregon and Washington saying, "No, we don't need that new enterprise here. It will be better for us in the long run if it is located in Pocatello, Tucson or Grand Junction." But with constantly increasing freight rates, plus the likelihood that the principle of mill basing will be more generally applied, the need for such wider distribution of manufacturing in the West may easily be something worth careful consideration.

These trends in freight rates and pricing seem likely to bring about considerable restriction of markets, so that manufacturers will need concentrated sales territories fairly close to home.

The remark might be made, "Let the hinterland take care of itself and get its industries after we have all we need." But the point is that these markets are not profitable enough now to warrant cultivation because the freight rate is too high, and the reason the freight rate is so high is that there is not enough traffic. Consequently each new industry introduced into the back country hastens the day when its locality becomes a market for other enterprises located elsewhere in the West.

It is highly doubtful that we will ever have any effective concerted movement to bring about this dispersion. More likely is that it will come about through industry itself seeking locations in smaller communities. As was pointed out by Stuart P. Walsh in our January issue, "Of all the factors that draw industry to the countryside, the most compelling is what may be called better human relations." But in addition to this self-determination, perhaps some steering could be done to good effect by existing Western enterprises with their business friends who are contemplating setting up a Western operation.

Colonial Windmills

SOME of the yowling about the "colonial West" vainly trying to escape from under the heavy thumb of Eastern domination bears a suspicious resemblance to our medieval and mythical friend Don Quixote charging at the clanking windmills. What everyone else in the peaceful Spanish countryside saw as useful and inoffensive instruments for hoisting water out of the ground appeared to him not as windmills at all, but vicious and dangerous enemies.

After all, the Eastern capital and Eastern enterprises always will be windmills in the Western landscape, but with an increasingly large proportion of Western-made windmills included. The colonial status, if any, will end as Western enterprisers gather initiative and experience, which they are already doing, not only the spectacular Kaisers and Gianninis but plenty more who are less conspicuous but relatively as successful.

Perhaps the modern Don Quixotes would have preferred a 100-mile high wall at the Missouri River, behind which the West could have made its transition from a land of Indians and buffaloes to civilization and industry undisturbed . . . some 200 years hence.

Ghost-Written Speeches

OUR dictionaries tell us that a ghost is the spirit of a dead person walking around loose where it can be seen. Nobody believes in ghosts any more. They just don't make sense. But our dictionaries don't say what a ghost-written speech is, so we offer the following: "A speech that has no life, delivered by some live individual who for the time being has gone dead on his feet (but who probably would say something interesting if he had mislaid his manuscript), and heard by a group of people who wish they had gone home before he started." Who will volunteer to be the first charter member of the Society for the Suppression of Ghost-Written Speeches?

COSTS *can* BE FORCED DOWN

and here's how . . .

• Now, more than ever, the assistance of Glidden Technical Service can be an important factor in reducing your operational costs. Now, more than ever, Glidden's trained finishing experts can help you by:

1. Reviewing your entire finishing operation and materials . . .
2. Recommending the right finish for your products—in line with your facilities . . .
3. Eliminating slow-ups or stoppages in your production line through constant preventive service . . .
4. Reducing the number of costly rejects to an absolute minimum.

Plan now to use Glidden Technical Service for operational assistance . . . and Glidden Industrial Finishes for performance that will set a new low record in your finishing costs.

THE GLIDDEN COMPANY

1300 Seventh St., San Francisco 7, California
4255 North Produce Plaza, Los Angeles 11, California
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Factories and Sales Offices in: Chicago (Nubian Division), Cleveland, Reading, Pa.; Minneapolis, New Orleans, St. Louis, San Francisco. *In Canada:* The Glidden Company Limited, Toronto, Ontario. *Sales Offices in:* Atlanta, Boston, Los Angeles and New York City.

QUALITY Glidden PRODUCTS

TAKE YOUR PROBLEM TO . . . **Glidden** *Industrial Finishes for every purpose*

be very much interested in this reliable source of fuel supply which is available on a continuing basis.

P. L. SHIELDS
President
Spring Canyon Coal Company
Salt Lake City, Utah.

Editor's Field Book Jottings

EDITOR'S NOTE: This isn't an editor's field book at all this time. It's something else. The editorial department is accorded the privilege of reading the advertising salesman's reports, and after going through a batch of them we are inclined to believe they frequently make better reading than the experiences of the editorial department. Consequently we reproduce below a few choice bits from the salesmen's reports.

* * *

Called to make an appointment but the old)..%/$ hung up on me after telling me he had an agency in Newark.

* * *

Gave me lots of time although three wolves (salesman's name for other advertising salesmen) waiting in the lobby.

* * *

He was nice and friendly, and as I started to pour it on he stopped me with the remark that I evidently hadn't "heard all." It turned out that they had been working hot and heavy to sell some equipment out West when out comes our magazine with a nice long article telling the readership how cleverly and cheaply the garage gang of some outfit had made a rig to do the same job, carrying complete information as to how it was done and how "You, too, can make one and save money."

* * *

I recently received a publicity item from the agency re this firm's new machine. I called on firm and talked briefly with R—— about advertising. He said he had just gotten into production, that orders were stacked up (I didn't see the stack) and that he could not consider advertising until next year. The publicity came from ——, —— & ——, who certainly grind it out. I'm beginning to suspect they don't have a layout man on the staff—all publicists.

* * *

Had to stay in this lousy town overnight. Sales manager out of town, receptionist tipped me off that Mrs. —— is the power. She and the Pres. make up the layouts and wrangle over copy, media, etc. Sales manager rarely around to participate. Mrs. —— says they have no agency, run their advertising on a hit or miss basis, have suspended all advertising for the time being (and are extremely self-satisfied). They have a piece of equipment that is a honey, seven good distributors in the West, yet aren't advertising it. Why, I don't know. I'm quite sure they have the dough. All I can say for sure it's a good outfit to keep in touch with. Send promotional material to Mrs. ——. I have a hunch she bosses the Prexie around.

Contract Their Maintenance

Union Oil Company are discontinuing their own maintenance work at refineries and contracting it out to independent firms. This includes drilling, barging and stock transfer. It was begun two years ago, but accelerated by the recent labor dispute.

Foundation for Safety

AW SUPER-DIAMOND FLOOR PLATE

So easy to plan and build with—so safe and inexpensive. Exclusive engineered design, with Super-Diamonds at 45° angles, gives grip-without-a-slip safety and makes plates easy to match without waste. Use it for safe, strong, clean loading platforms, fire escapes, walkways, trench covers, running boards, machine tool bases and other product and plant applications.

FREE
16 Page Catalog L-32. It's packed with useful information. Write now.

AW SUPER-DIAMOND
FLOOR PLATES THAT GRIP

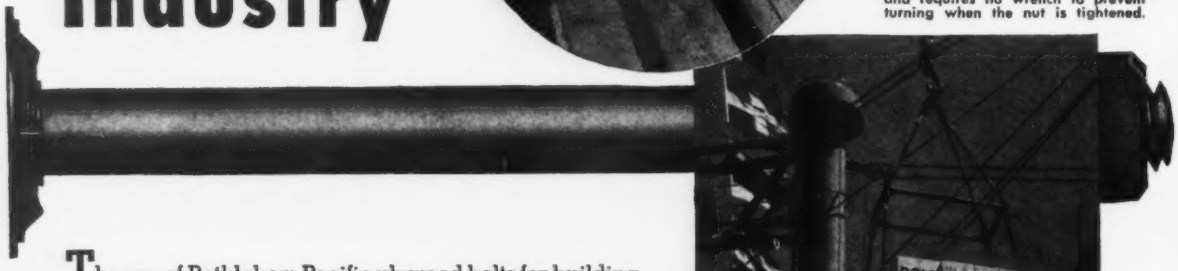
A Product of ALAN WOOD STEEL COMPANY

Other Products: Permaclad, Stainless Clad Steel • AW Super Grip, Abrasive Floor Plate • Billets • Plates • Sheets (alloy and special grades)

Plywood Bolts serve the Hawaiian Pineapple Industry

Above: Tightening nut on plywood bolt. Correct length of bolt, and countersunk hole for the nut means no obstruction on topside of pallet.

Left: No countersinking is needed for the head. The plywood bolt head drives in flush with the timber and requires no wrench to prevent turning when the nut is tightened.



The use of Bethlehem Pacific plywood bolts for building wooden pallets provides the Hawaiian Pineapple Company with a twofold savings. First, these bolts eliminate several time-consuming hand operations in the pallet shop. Second, they cause no damage to case-goods cartons when the pallets are loaded. As a result this company uses several hundred thousand galvanized plywood bolts a year for the construction and repair of pallets alone.

Here are the advantages of this improved fastening

The flat-top head of the plywood bolt fits practically flush with the surface of the timber . . . there is no dangerous obstruction, countersinking is not needed for the head.

The head of the plywood bolt has 50 pct more bearing surface than a comparable carriage bolt . . . head washers are unnecessary.

The four diamond-shaped lugs under the head keep the bolt from turning . . . no wrench is needed to hold the head.

Circular ridges under the head form a tight seal with the wood . . . water seepage into the bolt hole is reduced.

The Bethlehem Pacific plywood bolt is widely used in buildings, box cars, boats and countless other products. For full information get in touch with your jobber or call the nearest Bethlehem Pacific sales office.

Cases of Dole Pineapple being hoisted aboard ship. The wooden pallets used here are built with Bethlehem Pacific plywood bolts.

BETHLEHEM PACIFIC COAST STEEL CORPORATION

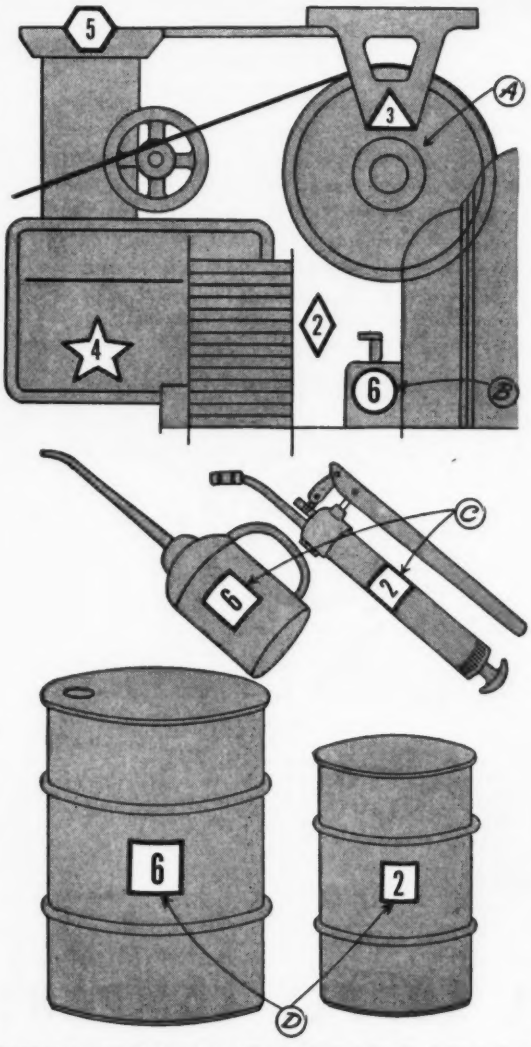
Sales Offices: San Francisco, Los Angeles, Portland, Seattle, Honolulu

Bolt and Nut Plants: Los Angeles, South San Francisco, Seattle

BETHLEHEM PACIFIC

BETHLEHEM STEEL

Case 1102--Preventing Lubrication Mistakes in Plants and Motor Fleets



Many operators of plants and fleets in the West have practically eliminated operation delays due to improper lubrication or use of wrong lubricants, by installing Standard of California's free, coded system of planned lubrication. The system employs symbols instead of colors to indicate lubrication intervals -- stops mistakes caused by color-blindness, faded colors or changed appearance of color in different lights. Available for plants and fleets in the Seven Western States.

A. Black-on-white decalc symbols show desired lubrication intervals at a glance. Are placed directly on machine at lubrication points.

B. Numbers on the decalcs indicate the kind and grade lubricant to be used at each point. Chart card on each machine gives meanings of symbols and numbers.

C. Lubricant number-decalcs on dispensers identify lubricant in each dispenser and prevent its use in wrong place.

D. Lubricant number-decalcs on barrels, cans or other storage show kinds and grades of lubricant in stock.

All decalcs, chart cards and other material for the Standard Coded System of planned lubrication, and installation of the system are free. On request, a Standard Fuel and Lubricant Engineer from Standard Technical Service will survey your plant or other operation any place in the Seven Western States. He will make recommendations, give expert advice and install the Standard Coded System if you desire it.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

STANDARD TECHNICAL SERVICE will make your maintenance job easier. If you have a lubrication or fuel problem, your Standard Fuel and Lubricant Engineer or Representative will gladly give you expert help; or write Standard of California, 225 Bush Street, San Francisco 20, California.

RPM CALOL

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WHILE it is true that the demand for steel has reached a peace-time high, we are doing everything possible to obtain tonnages of the types of steel you need. So, for Stainless, High Strength or Alloy Steel, Hot Rolled or Cold Finished Bars, Structural Shapes, Plates and Sheets, your best bet is to "Try Us First." Remember, too, that we are distributors of Metal-Working Tools, Supplies and Machinery. Just telephone, wire or write our warehouse nearest you. *We welcome your inquiries for literature covering Stainless, Alloy and High Strength Steels. There's no obligation.*

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SEATTLE (1), Sales Office: 1331 Third Ave., Room 402, ELliott 3014, Whse: 3rd. South & Lander Sts.
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UNITED STATES STEEL

THE WESTERN OUTLOOK..*News...Statistics...* 1

Coast manufacturing employment up 53,000 from year ago, total at work 191,000 more; Oil inventories pile up, prices are softening; Gas indicates coast population up 137,000; Plans for Japan may strip coast of steel scrap; Lumber outturn overtakes the demand; Canned foods stocks backed up by strike; Sugar, flour, brighter; meat, apparel, dull.

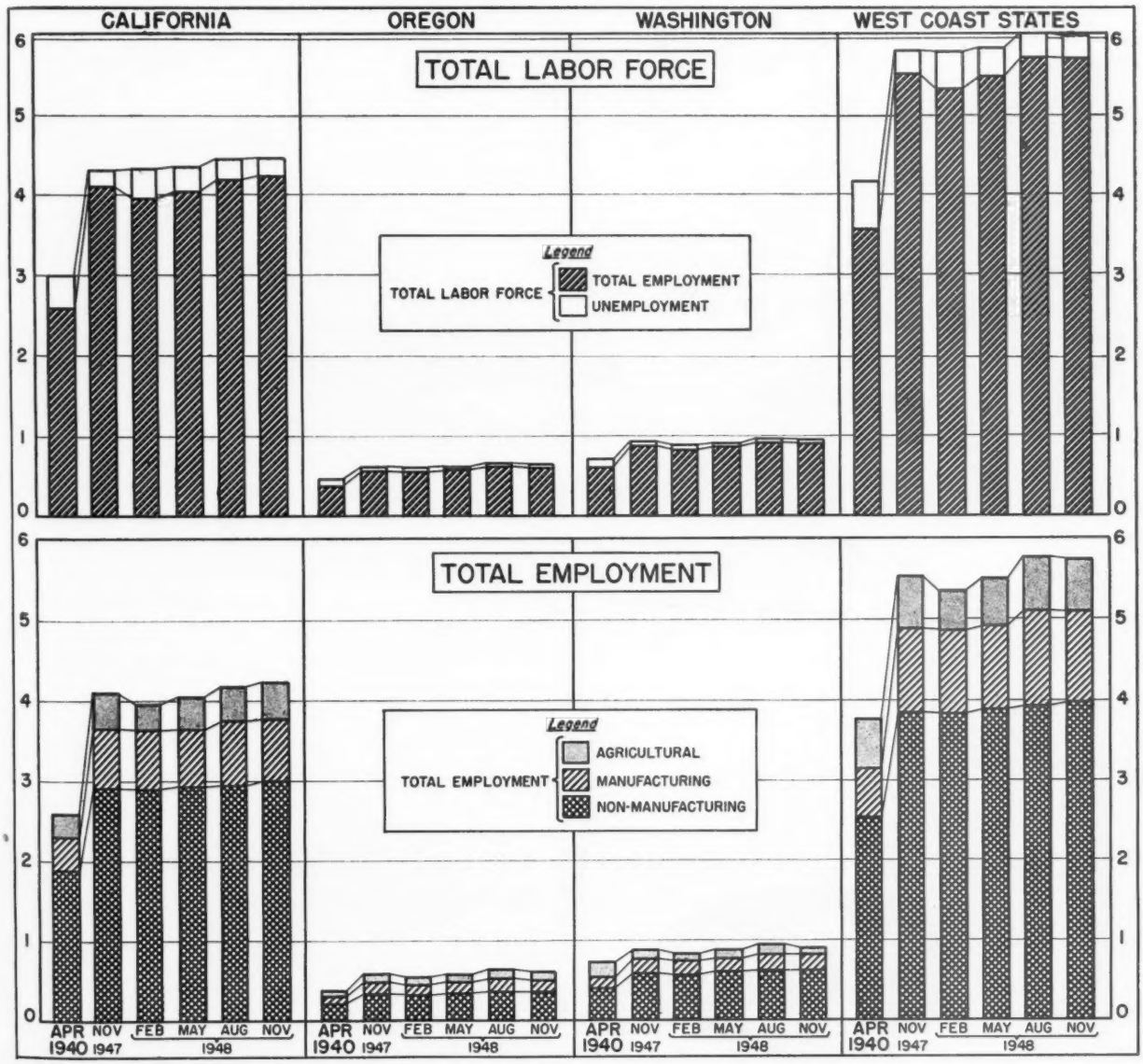
EMPLOYMENT picture for the three Coast states for the last year, with a comparison to 1940, is graphically shown in the charts below, in which the figures represent hundreds of thousands. Mid-November estimates by the U. S. Employment Service show an increase in non-agricultural employment of 185,000 over November 1947, manufacturing accounting for 52,000 of the gain. Increase over 1940 is big in all three states.

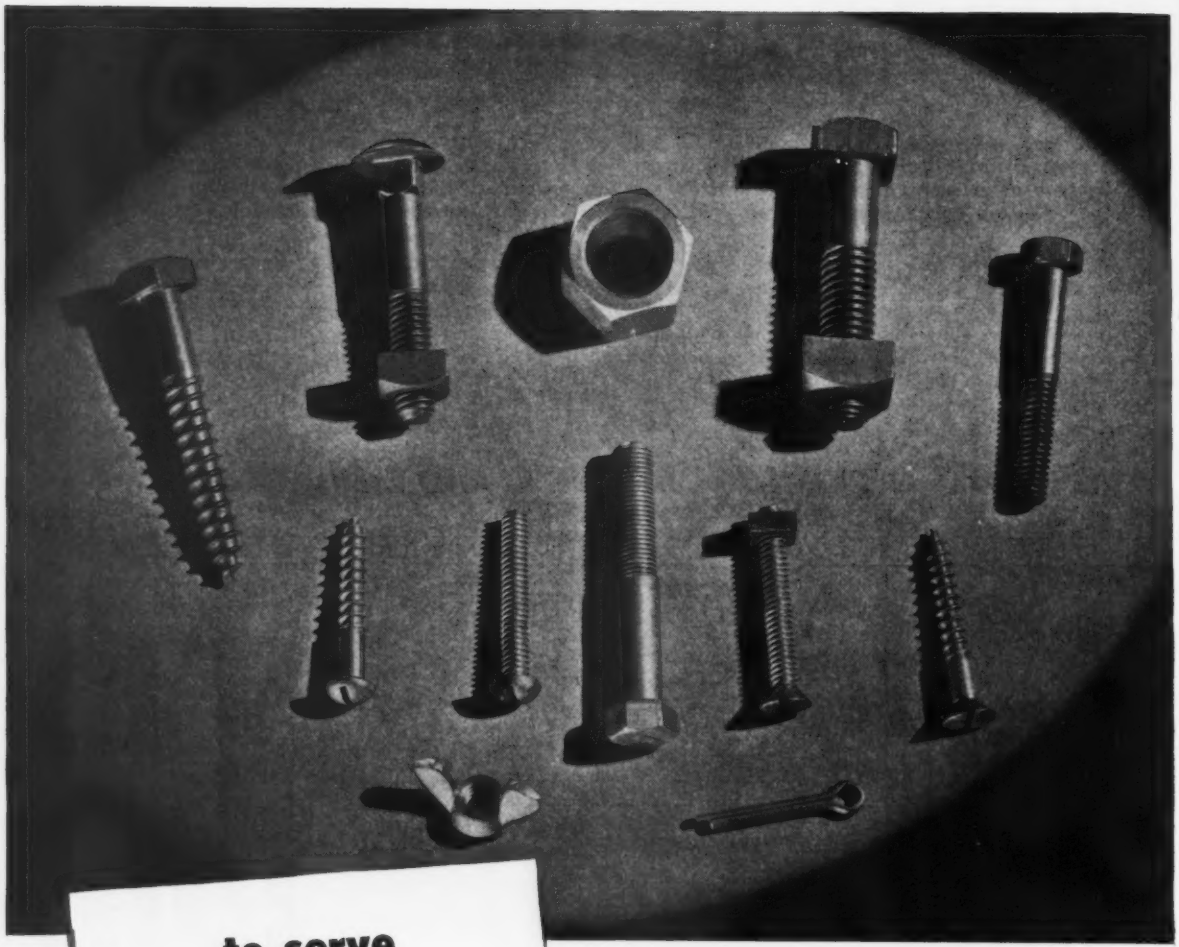
Unemployment in November 1948, estimated at 301,700, is higher by 7,700 than in 1947, but in per cent of total labor force is slightly lower. December saw sharp seasonal increases in unemployment.

California's total manufacturing employment was down 2,200 in December from 1947, with the south 600 up. Price breaks in lower lumber grades may affect the Northwest.

ESTIMATED LABOR FORCE AND EMPLOYMENT

ALL FIGURES IN MILLIONS





to serve Western Industry better...

The National Screw & Mfg. Company, one of the oldest and largest manufacturers of screws, bolts, nuts and special fasteners, is now in a position to serve its many West Coast customers with its own plant in California. As the first step in this expansion, the manufacturing facilities of the Apco Mfg. Co., a division of Lorraine, Inc., have been acquired.

Construction is now under way of a complete modern plant with the most up-to-date equipment for manufacturing headed and threaded fasteners.

In addition to a complete line of standard fasteners, "National" makes many specials, including Phillips Recessed Screws and Bolts and Twin-Fast Wood Screws.

For the Best in Fasteners . . . Look to "NATIONAL"

NATIONAL SCREW & MFG. CO. OF CAL.

1649 18th Street · Santa Monica, Cal.

National HEADED AND THREADED PRODUCTS

THE WESTERN OUTLOOK..News...Statistics... 2

Commerce and Banking

Carloading forecasts, first quarter 1949, compared with 1948: Idaho, up 15.8%; Utah, up 10.9%; Wyoming, down 12%; Pacific Coast Transportation Advisory Board territory, up 5.5%. Commodities in Pacific Coast territory: agricultural implements, up 16.8%; aircraft and parts, up 55.6%; automobiles and trucks, up 21.5%; vehicle parts, up 14.6%; chemicals, up 15.6%; coal and coke, up 23.7%; frozen foods, up 33.3%; canned foods, up 10.5%; iron and steel, up 29.3%; lumber and forest products, down 3.1%; machinery and boilers, down 28.4%.

Department store sales for 12th Federal Reserve District show sharp drop in October from December, mostly in California, with Portland and eastern Washington areas slightly up.

Electric Energy

Pacific Northwest's critical all-time peak of demand was passed in December without dropping interruptible service to the aluminum reduction plants around Portland and Spokane. Demand reached nearly 5,000,000 kilowatts, up 500,000 kw. from a year ago.

(Continued on page 21)

CONSUMERS' PRICE INDEX

From Bureau of Labor Statistics
100 = 5 yr. Avg. 1935-39

	Los Angeles	San Francisco	Portland	Seattle	Denver
May 15	169.1	....	....	174.3	....
June 15	168.8	174.2	....	....	....
July 15	170.3	....	180.3	....	172.5
Aug. 15	171.0	....	....	176.2	....
Sept. 15	171.0	177.1	....	....	....
Oct. 15	171.8	....	180.1	....	171.0
Nov. 15	172.2	....	....	174.3	....

ELECTRIC ENERGY

(Production for Public Use—In thousands of kilowatt hours. Source: Federal Power Commission)

	Mountain		Pacific Northwest		California		Total Pacific	
	1947	1948	1947	1948	1947	1948	1947	1948
May	1,254,204	1,432,407	1,450,716	1,661,764	1,738,511	1,632,572	3,189,227	2,294,336
June	1,263,666	1,432,925	1,363,534	1,458,586	1,759,504	1,747,255	3,123,038	3,205,841
July	1,342,747	1,558,236	1,382,030	1,663,475	1,911,232	1,946,914	2,293,262	3,610,389
August	1,296,208	1,500,992	1,445,637	1,722,841	1,890,554	2,061,250	3,336,191	3,784,091
September	1,277,108	1,473,455	1,428,510	1,699,765	1,761,157	1,859,470	3,189,667	3,559,235
October	1,260,471	1,376,602	1,575,071	1,803,868	1,726,821	1,817,105	3,301,892	3,629,973

*Revised.

NATURAL GAS

(CALIFORNIA)

(Compiled by Roy M. Bauer, gas supply supervisor, Southern California Gas Company)

			*Utilization (in thousands of cubic feet)			
1948	Domestic and Commercial	Industrial	Domestic and Commerc'l Sales	Industrial Sales	Electric Generation	Net Receipts from Producers
April	2,417,506	5,473	23,369,063	11,242,979	2,909,873	36,848,677**
May	2,424,637	5,518	16,846,280	12,944,257	3,123,625	34,448,763**
June	2,428,429	5,543	14,048,039	13,194,978	3,580,452	30,910,658**
July	2,432,404	5,562	10,794,515	12,879,704	5,806,696	32,067,040
August	2,445,107	5,579	9,839,589	14,071,645	6,577,345	34,802,159
September	2,457,056	5,655	10,221,079	15,029,958	8,128,570	35,946,359

**Utilization figures do not include company use, storage, and unaccounted for.*

***Includes figures from Texas.*

BANK LOANS

Industrial, commercial and agricultural
(In millions of dollars)

From weekly reporting member banks of Fed. Res. System in 7 western cities: L.A., S.F., Portland, Seattle, Tacoma, Spokane, and Salt Lake.

(Average of Wednesday reports)

1948	
July	2,045
August*	2,108
September	2,160
October	2,184
November	2,252
December	2,297

*Includes 3 days of preceding month.

BANK DEPOSITS

(In millions of dollars—adjusted)

Daily average month, all member banks in 12th Federal Res. Dist. Demand deposits excluding U. S. Gov't deposits, cash items in process of collection, and interbank deposits.

1948	Net Demand Deposits	Time Deposits
May	8,720	6,012
June	8,777	6,019
July	8,735	6,026
August	8,834	6,009
September	8,950	6,004
October	8,937	6,012
November	8,930	6,014

FREIGHT

Cars of revenue freight, railroad carriers in 11 Western states.

(Compiled from Assn. of Am. R.R. weekly reports)

	Carloadings		Received from Eastern Connections	
	1947	1948	1947	1948
*June	714,982	718,618	348,892	358,714
July	755,983	560,656	331,613	271,766
August	728,578	622,139	381,068	332,008
September	825,668	505,545	404,771	273,876
October	701,972	531,796	382,413	297,854
*November	601,949	559,768	324,783	325,125

*5-week period.

WHOLESALERS' SALES

In thousands of dollars. Percentage changes are from corresponding month of preceding year.
From Bureau of the Census.

MOUNTAIN

	Automotive Supplies	Change	Electrical Goods	Change	Furn. and house furn.	Change	Groc. and foods exc. farm prod.	Change	General Hardware	Change
May	284	+ 1	3,412	+ 12	...	....	....	....	2,313	+ 8
June	685	+17	3,832	+ 25	336	+28	....	....	2,356	+19
July	811	+ 7	3,731	+ 22	...	....	....	....	2,565	+26
August	752	+10	3,583	+ 36	242	—10	....	....	....	....
Sept.	727	+12	4,266	+ 29	...	....	....	....	....	....
October	1,098	— 1	3,633	+ 10	471	+ 1	....	....	2,483	— 5

PACIFIC

May	2,687	— 4	12,587	+ 15	281	+ 6	6,984	....	8,096	+ 3	536	+ 6	1,616	+42	597	—17	...	....
June	2,756	+ 2	12,557	+ 11	239	+ 26	5,129	....	8,040	+ 8	419	+ 7	1,578	+53	604	+ 6	...	....
July	2,686	— 5	12,965	+ 14	1,435	+ 18	8,395	....	7,016	+ 8	522	+ 2	1,015	+37	902	+ 8	...	....
August	2,181	+ 6	13,740	+ 23	303	+ 13	10,377	....	6,043	+41	2,324	+24	1,721	+38	...	....	...	....
Sept.	2,148	— 4	17,422	+ 27	315	+ 5	4,507	....	7,439	+ 4	2,080	+28	1,470	+10	....	....	...	....
October	2,879	—11	14,094	+ 13	1,926	— 3	6,174	....	6,995	— 3	2,252	+ 7	1,403	— 6	442	—22	...	....

*Full-line wholesalers.

INDEX OF DEPARTMENT STORE SALES

Index numbers, 1935-39 daily average=100 with seasonal adjustment. Compiled by Federal Reserve Bank.

	Total 12th Fed. Res. Dist.		Southern California		Northern California		Portland		Western Washington		Eastern Washington and northern Idaho		Utah and southern Idaho		Phoenix	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
May	329*	356	363*	404	292	313	315	339	338	343	329	338	340	365	421	484
June	334	372	365	422	295	328	328	350	340	363	337	390	343	357	420*	459
July	331	365	363	411	291	318	329	382	341	344	313	382	350	334	404	464
August	353	383	401	454	307	326	326	380	359	340	350	385	361	352	440	487
September	347*	355	392	404	299	324	322	341	359	309	363	362	337*	329	459	473
October	342*	336	379*	374	293	297	341	346	364	307	362*	369	343	330	457	467

*Revised

INDEX NUMBERS OF WHOLESALE PRICES BY GROUPS OF COMMODITIES AND BY MONTHS

Bureau of Labor Statistics, Washington 25, D.C.
(1926 = 100)

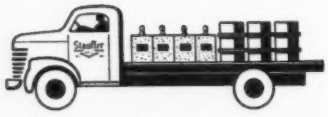
Year and Month 1948 Yr. Avg.	Farm Products	Foods	Hides and Leather Products	Textile Products	Fuel and Lighting	Metals and Metal Products	Building Materials	Chemicals and Allied Products	House Furnishing Goods	Miscellaneous	ALL COMMODITIES
June	196.0	181.4	186.8	149.6	133.1	158.7	196.8	135.7	143.4	121.4	168.2
July	194.9	188.3	189.2	148.9	135.7	162.8	199.4	134.4	144.5	120.3	168.6
August	191.1	189.5	188.4	148.5	136.6	170.8	202.8	132.0	145.4	119.6	169.4
September	189.1	186.3	187.5	147.8	136.7	171.9	203.9	133.3	146.1	119.9	168.5
October	182.2	177.3	185.5	146.8	137.2	172.4	203.3	134.4	147.4	119.0	165.0
November	180.8	174.3	186.2	146.1	137.3	173.3	202.9	133.2	148.2	119.2	163.9

Stauffer
CHEMICALS
SINCE 1885

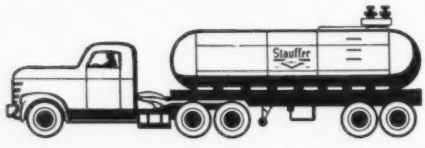
Stauffer Plant at
Richmond, California

INDUSTRIAL
ACIDS

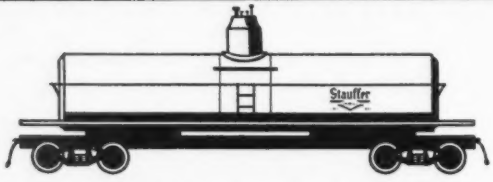
SULPHURIC
MURIATIC
NITRIC



• Available in Carboys and Drums



• Available in Tank Truck Quantities



• Available in Tank Car Quantities

STAUFFER CHEMICAL COMPANY

30 Plants in the United States—10 in the West

SALES OFFICES

SAN FRANCISCO NORTH PORTLAND, ORE. LOS ANGELES
CHICAGO AKRON HOUSTON
APOPKA, FLA. NEW YORK

THE WESTERN OUTLOOK..News...Statistics... 3

ELECTRIC ENERGY—*(Cont. from page 19)*

Northern California's situation much better. Storage situation in mountain reservoirs good, early rainfall much better than last year, and more steam-electric supply. Demand likely to be very close to supply, however, clear through next August. Southern California in surplus position, Arizona getting by because of low period in irrigation pumping demand.

Oil

Further easing of the recently critical oil situation is reflected by a number of new developments:

(1) Inventories are rising. Heavy fuel oil has piled up to the point where some companies have cut their prices to industrial, railroad, marine and utility customers. Demand slackened some because of ship and rail strikes and mild weather, while high production rates quickly built up the reserve.

(2) Price advances recently pioneered by Prairie and Sinclair for crude petroleum have been cancelled. Other companies failed to follow the advances.

(3) The National Petroleum Council has suspended its immediate work on voluntary allocation plans, believing individual companies can handle any spot shortages.

(4) The Interior Department has withdrawn its request that substitution of buses for street cars be delayed until the petroleum supply eases.

Leading forecasters predict six to eight per cent increases in demand for petroleum in 1949 but say inventories are at an all-time high and production can at least maintain them.

An interesting comparison can be made in the taxable sales of motor fuel last fall. Nationally, gasoline tax collections in October were up nearly 30 per cent over 1947 — but in the same month, motor fuel taxable sales in the five Pacific Coast states ran barely even, or in some cases, slightly lower than a year ago. Apparently it is another phase of the decline in the West's postwar feverish activity.

First major oil discovery in Colorado since the famous Rangely field has been reported in Montezuma County. The oil is 68-gravity crude, bringing a high premium price.

Initial run in a new continuous-type retort at the government's oil shale experimental project at Rifle, Colorado, has exceeded expectations, the Bureau of Mines reports. If it proves out it may mean a large step toward economic recovery of this enormous reservoir of potential fuel.

The Army is considering building a plant in Alaska at a cost of $112,000,000 or more, to produce oil from coal as a military fuel.

New wells drilled in California in 1948 totaled 2,579; in 1947, 2,094.

Gas

Residential customers for natural gas in the Pacific states for companies accounting for 89 per cent of the total were 137,401 more for third quarter 1948 than third quarter 1947, a fair indication of population gain. These utilities gained 216 industrial customers and their sales were up 11.6 per cent from 1947. Mountain states utilities reporting gained 28,759 residential and lost 79 industrial customers. Their sales were up 9.2 per cent. Total number of manufactured gas residential customers in the Pacific states was off 3.6 per cent, and total sales of manufactured gas 5.3 per cent.

Coal

Intermountain coal production was at a normal winter rate during December, except for one Utah camp which cut back sharply because of the strike at Kennecott Copper Corp.'s Utah division.

IRON AND STEEL

Western Area of the United States

From American Iron and Steel Institute (in net tons)

	Pigiron Output	Percent of Capacity	Steel Output	Percent of Capacity
May	187,501	84.5	398,905	92.9
June	202,796	94.6	397,414	95.5
July	196,608	89.0	410,244	95.7
August	163,319	73.8	374,342	87.1
September	168,534	78.8	360,252	86.8
October	188,238	85.0	413,721	96.3
November	209,571	97.8	428,986	103.1

Alloy Steel

	Output	Carbon Ingots, Hot Topped*
May	7,173	9,341
June	6,948	3,672
July	5,445	6,638
August	4,848	6,388
September	3,553	6,119
October	6,879	10,916
November	4,995	13,593

*Included in total steel.

BITUMINOUS COAL AND LIGNITE

(In thousands of tons. From Bureau of Mines)

	(Colo.-N. Mexico)		(Wyoming)		(Utah)		(Montana)		(Wash.-Alaska)	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
April	431	370	482	378	514	245	196	200	108	104
May	485	563	557	519	653	701	242	215	97	140
June	520	505	596	477	581	560	150	198	107	137
July	298	391	345	346	408	502	182	228	71	95
August	490	536	518	480	523	534	255	231	103	119
September	629	596	638	508	532	539	274	245	116	128
October	702	592	783	604	524	526	318	250	152	147

PETROLEUM

(California, Oregon, Washington, Arizona, Nevada)

(From Bureau of Mines)

	CRUDE PRODUCTION (Barrels, daily avg.)	TOTAL DELIVERIES (Thousands of barrels daily)							
		GASOLINE		GAS OIL & DIESEL		HEAVY FUEL OIL		ALL PRODUCTS	
	1948	1947	1948	1947	1948	1947	1948	1947	1948
April	.....	336	357	125	159	385	357	988	1,000
May	.....	332	384	85	123	357	328	912	970
June	.....	385	401	90	117	362	330	978	995
July	.....	335	380	88	94	360	321	935	951
August	950,000	370	394	100	102	362	333	985	991
September	766,000	370	359	113	100	386	248	1,030	822
October	938,000	356	332	139	108	375	295	1,010	850

COPPER

(Short tons. From U. S. Bureau of Mines)

	ARIZONA		UTAH		MONTANA		NEW MEXICO		NEVADA		TOTAL WEST'N STATES	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
Apil*	30,200	31,625	23,500	23,400	5,200	5,370	5,471	6,094	4,050	3,285	68,853	70,655
May*	31,000	30,815	25,000	24,120	4,800	5,270	5,368	6,149	4,600	3,520	71,180	70,585
June	30,000	31,750	26,000	23,406	4,760	4,900	5,400	6,927	3,000	3,410	69,160	70,379
July*	32,000	30,150	23,500	22,800	4,600	4,495	5,400	5,872	4,040	3,150	70,012	67,477
August*	29,870	30,125	23,620	23,980	4,160	4,385	5,930	5,692	4,430	4,630	68,735	69,720
September	29,800	28,330	23,200	22,915	4,000	4,360	5,810	5,893	4,160	3,680	67,731	66,142
October	30,836	32,260	16,470	18,210	4,690	4,550	5,558	5,208	3,990	3,531	61,544	63,759

*Corrected.

Steel

With departure of four steel industry men to Japan to investigate scrap situation, of which committee Marshal Shapiro, president California Metals Corp., Oakland, and Ronald Scott Coulter of San Francisco office of Bethlehem are members, much speculation whether General MacArthur's efforts to rebuild Japanese steel industry will mean drawing on the Pacific Coast for scrap. Japan reported to have fair amount of scrap, although some of it alloy scrap, which is not particularly desirable, but if Japan's mills start up, MacArthur probably would not want to release the scrap. Japan has no ore, Manchuria has low grade ore.

At present Pacific Coast scrap situation slightly better, with some scrap brought in by dealers from outside the area, and eastern situation easing up. The market on cast iron grades of scrap has broken, due to falling off of castings and other jobs in foundries.

Some easing in demand for wire products reported, and structural and bar stock, still too early to determine whether purely seasonal or a real downturn. Jobbers in fairly good shape as to supply. Geneva began running hot rolled coils in January for shipment to Pittsburg plant of Columbia steel for tin plates and sheets.

Fontana's output for 1948, 853,000 ingot tons (1947 total 796,000 tons), and 615,000 tons of finished steel.

Non-ferrous Metals

Non-ferrous metal production for December was far under normal because of the Kennecott strike. The Bingham mine, which produces some 30 per cent of the domestic copper and substantial quantities of other metals, was closed throughout the month. The trend in other properties is slightly upward.

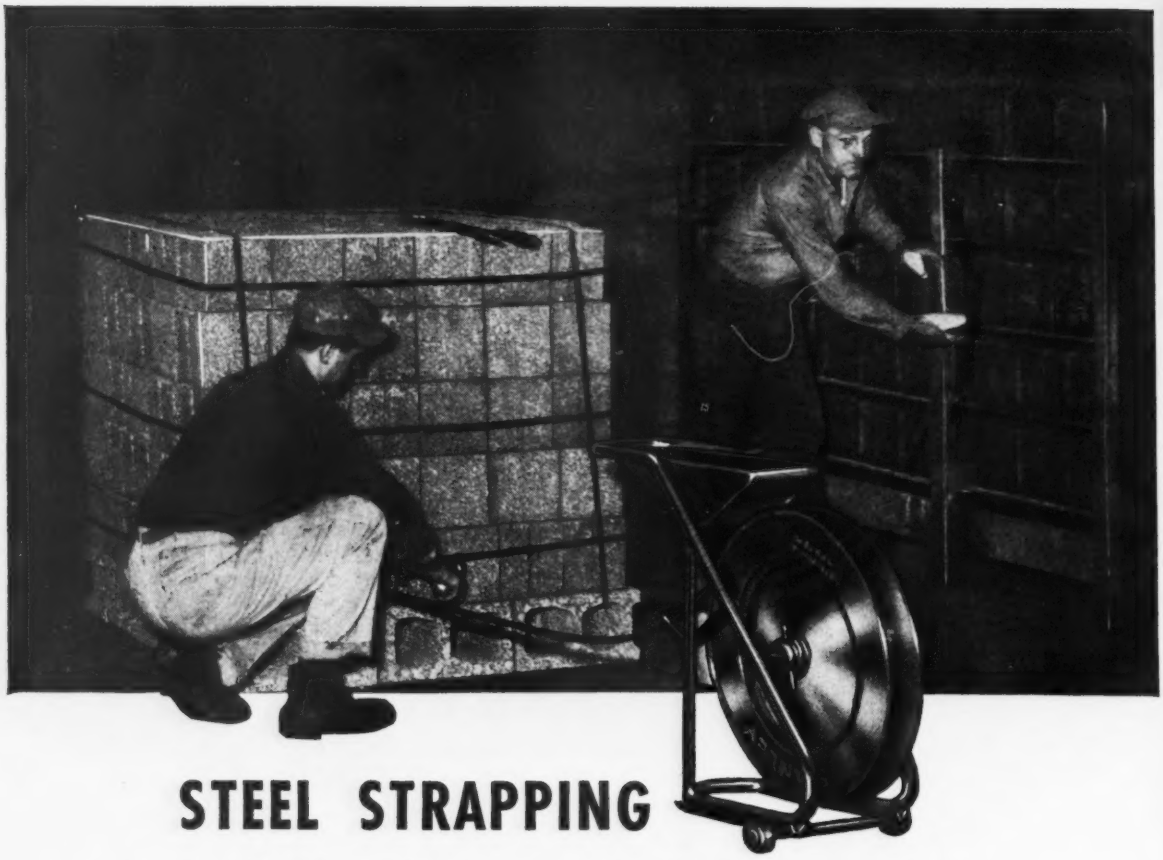
Aluminum

Reynolds Metals got by the December peak of demand without loss of electric power at Troutdale and Longview, while Permanente averaged around 5½ to 5¾ pot lines at the Mead reduction works, while Alcoa gave up its interruptible power at Vancouver because of its uncertainty and high cost, and cut operations down to a four-line basis. Demand from aircraft industry leveling off somewhat after initial heavy calls for sheet when the military program first got under way.

Lumber

Lumber production generally seems to have caught up to demand, except for redwood, where the effects of a prolonged strike are still felt. S. V. Fullaway, Jr., secretary-manager of the Western Pine Assn., reports lumber stocks at the mills as of December 31 at 1,698,000,000 board feet, up 489,000,000 from a year ago. This inventory volume about the same as 1941 level. First quarter of 1949 shipments by the Western Pine industry will approximate 1,250,000,000 feet, or 10 per cent under the same period in 1948. All production records broken in 1948 with an estimated output of 7,230,000,000 feet. H. V. Simpson, executive vice-

(Continued on page 23)



STEEL STRAPPING

speeds shipping to keep pace with faster production

The Plasticrete Corp., Hamden, Conn., cinder block manufacturers, stepped up production and then came face-to-face with a shipping bottleneck. Machines turned out 720 blocks an hour instead of 600. Fork trucks were rigged to handle two pallets of blocks instead of one. A 2-cycle curing process was evolved. But this faster flow called for faster handling and shipping. As so many other users of Stanley Steel Strapping have discovered, Plasticrete found that the quickest, cheapest, safest way to handle this faster production flow was to tie "cubes" of blocks together vertically and horizontally into easily, economically shipped units.

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STEEL STRAPPING AND CAR BANDING SYSTEMS

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HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

(Continued from page 21)

president, West Coast Lumbermen's Assn., reports unfilled Douglas fir orders at end of November 429,486,000 feet, gross stocks 932,381,000 feet. Output for first 11 months of 1948 93,000,000 feet behind 1947, due to slackening demand, spring floods and strikes.

Building Materials

Building costs, which showed a sudden jump upward in September leveled off for October in Western cities, according to the American Appraisal Company. Their construction cost index indices are as follows:

(1913 = 100)

	Decontrol Nov. 1946	Aug. 1948	Sept. 1948	Oct. 1948
Denver	326	450	458	458
Seattle	351	504	521	523
San Francisco	323	450	459	460
Los Angeles	344	479	488	488

Clay wall and floor tile usage in California 1948 totaled more than 21,000,000 square feet, mostly in southern California, an increase of 3,440,000 square feet over 1947, according to the Tile Council of America.

Some indications of demand for building materials easing up, supply probably catch up to demand this year. Pipe probably be the last item to come even with supply.

Cement mills look for as good a year in 1949 as 1948. With winter slackening demand, mills catching up on storage and doing repair work, although running full tilt.

Canning and Packing

As a result of the maritime strike, primarily, stocks of canned fruits and vegetables from Pacific Coast canneries have backed up heavily, and whether all of this lost fall business can be regained remains to be seen. There has been some price cutting on fruit cocktail, although most items remain firm, and the strength of tomatoes has been maintained by a big reduction in the 1948 pack. Tomato juice and tomato sauce packs up over 1947, all other tomato products down.

Figures as of December 1 from the Canners League of California show the following stocks on hand:

	Cases	
Apricots	1,802,140	(No. 2½ can basis)
Sweet cherries	47,916	" "
Pears	764,885	" "
Free peaches	984,357	" "
Cling peaches	8,967,598	" "
Fruits for salad	514,869	" "
Fruit cocktail	6,543,412	" "
Mixed fruits	101,120	" "

Northwest Canners Association report comparative stocks on hand for Dec. 1, 1947 and 1948 as follows:

	1947	1948
Sweet cherries	91,629	44,007
Sweet cherries	86,037	179,802
Free peaches	507,894	480,221
Purple plums	1,317,981	778,733
Pears	1,935,188	1,992,898

Pear pack figures for 1948 for the two associations are as follows: Northwest, 2,407,206 cases; California, 1,184,170 cases.

Can companies have announced that 1949 prices will be up about 11 per cent.

Packs and stocks on hand of tomatoes and tomato products are as follows:

	1948 Pack (actual cases)	Total Pack and carryover	Movement, July 1-Dec. 1	On hand Dec. 1
Tomatoes	4,712,962	6,192,758	2,260,991	3,931,767
Tomato juice	5,866,512	7,855,085	2,835,431	5,019,654
Tomato puree	969,064	(*)	(*)	(*)
Tomato paste	3,072,212	(*)	(*)	(*)
Tomato sauce and/or Hot sauce	3,983,197	4,924,123	1,166,064	3,758,059
Tomato catsup	4,626,050	6,090,721	1,870,592	4,220,129
Tomato chili sauce	322,655	549,036	122,256	426,780
Other tomato products	118,661	(*)	(*)	(*)

(*)Figures not given.

LUMBER

(In thousands of board feet)

From West Coast Lumbermen's Association (Douglas Fir, Sitka Spruce, Port Orford Cedar, West Coast Hemlock, Western Red Cedar):

Year through November	1946	1947	1948
Production	7,056,371	7,994,964	7,903,638

From Western Pine Association figures (Idaho White Pine, Ponderosa, Sugar Pine and associated species):

Year through October	1947	1948
Production	2,608,535	2,672,939

From California Redwood Ass'n figures (includes redwoods and whitewoods):

Year through November	1948
Production	428,346

SOFT PLYWOOD

From Bureau of the Census
(In thousands of square feet)

	1947	1948
April	147,008	164,862
May	142,409	150,717
June	140,147	150,187
July	107,588	122,386
August	137,042	174,062
September	147,823	181,567
October	170,769	184,860

PULPWOOD

(Pacific Northwest)
(Cords of 128 cu. ft., roughwood basis, Source: Bureau of Census)

	Receipts	Consumption
April	197,668	276,231
May	170,456	286,221
June	253,075	242,906
July	378,355	275,293
August	426,462	297,414
September	415,948	276,059
October	402,835	294,824

STRUCTURAL CLAY PRODUCTS

	UNGLAZED BRICK (in thousands of standard brick)		UNGLAZED STRUCTURAL TILE (short tons)		VITRIFIED CLAY SEWER PIPE (short tons)	
	Mountain	Pacific	Mountain	Pacific	Mountain	Pacific
April	8,927	19,008	2,258	2,344	2,458	13,997
May	9,988	22,340	2,595	2,767	2,400	14,565
June	10,504	33,017	4,046	3,119	2,520	15,675
July	11,405	31,389	3,389	2,832	2,369	15,022
August	11,474	31,178	2,232	2,374	2,576	15,022
Sept.	16,668	23,813	3,892	2,278	2,367	15,340
October	15,964	31,230	2,780	2,662	2,537	15,642

CEMENT

(In thousands of bbls.; from U. S. Bureau of Mines)

	—California—		Oregon - Wash.		Colo.-Wyom. Mont. Utah - Idaho	
	1947	1948	1947	1948	1947	1948
April	1,924	2,105	561	619	409	531
May	1,858	2,003	561	621	493	492
June	1,948	2,087	522	609	492	450
July	1,902	2,128	552	726	487	497
Sept.	1,931	2,152	585	676	435	486
Oct.	1,964	2,320	589	639	431	591

Sugar

A January advance in sugar prices has made things look brighter for both cane and beet operators and should encourage beet growers to plant. The Hawaiian cane crop for 1949 is estimated at 900,000 to 950,000 tons, which would be 50,000 to 100,000 tons above last year. The C&H refinery at Crockett, Calif., has been running at absolute maximum. Department of Agriculture forecast of 7,250,000 tons of beet sugar consumption for 1949 (raw value) has caused a bullish feeling, as the official consumption figure for 1948 was 7,341,000 tons, and the trade believes it was higher than that because of carryover from previous year absorbed. California crop had lowest sugar content in many years, due apparently to cold weather in growing season, quality poor everywhere else also. Imperial Valley harvest in California good in 1948, but not so promising for 1949.

Flour

One of the largest flour purchases in many months by the government in the Pacific Northwest, about 500,000 cwt., has cut into available supply, and wheat has fallen below its loan value, making farmers reluctant to sell. Consequently millers believe prices may go up, although the break in the wheat market has encouraged bakers to hold off buying in the hope that flour will go down. Mill feed business strong.

Flour milling in the three Coast states about 2 per cent above 1947, but nation as a whole gained 10 per cent in output. Total Coast output estimated at 25,000,000 sacks. First 10 months of 1948 Washington's estimated output 9,800,000 sacks, Oregon 4,850,000 sacks, California 3,300,000 sacks. West Coast mills account for about 8 per cent of national flour output.

Meats

West Coast meat packers feel as though the government has stood them up. After responding to Washington appeals to help out Uncle Sam by raising big heavy steers that provide cuts too big for ordinary retail use, they find the Army about to contract for 18,000,000 pounds Argentine boneless beef for feeding government personnel in the Far East. Middle Western and Eastern packers get similar deal in relation to feeding Army in Europe. Coast figure represents 25,000,000 pounds on the hoof, or 40,000 big steers. Army also going to South America for lamb and turkeys. Increased supply of grain last

(Continued on page 25)

WHEAT FLOUR

(In thousands of sacks; from Bureau of the Census)

	Ore.-Wash.	Montana	Utah	Colorado	California	Total
April	1,496	293	290	471	339	2,889
May	1,535	280	237	454	285	2,791
June	1,427	295	317	481	366	2,886
July	1,664	344	289	424	379	3,100
August	1,616	367	343	495	355	3,176
September	1,475	340	324	450	331	2,920
October	1,405	332	349	496	325	2,907

CONFECTIONERY AND COMPETITIVE CHOCOLATE PRODUCTS

(From Bureau of Census)
(In thousands of dollars)

Month	COLO. - IDAHO - UTAH Sales	Per Cent Change from 1947 For Year to Date	— WASH. - OREGON — Sales	Per Cent Change from 1947 For Year to Date	— CALIFORNIA — Sales	Per Cent Change from 1947 For Year to Date
August	359	—16	398	—28	1,982	+2
September	593	— 8	599	+15	2,156	+3
October	808	+ 3	466	—24	2,929	+3

HOUSEHOLD FURNITURE

Manufacturers' Shipments—11 Western States From Bureau of the Census (In thousands of dollars)

	Upholstered Furniture	Other Household Furniture	Total
3rd quarter, 1947	$11,047	$15,929	$26,976
4th quarter, 1947	13,336	21,098	34,434
1st quarter, 1948	10,633	20,739	31,372

1849

1949

Ducommun and California

celebrate 100 years of growth with the West

In 1849, young Charles Louis Ducommun, a Swiss watchmaker, opened a small store in Los Angeles. Ever since, the Ducommun organization has been closely identified with the growth and upbuilding of California.

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THE WESTERN OUTLOOK (5)

(Continued on page 23)

fall made it possible for producers to raise these big and now useless critters. Appeals being made to Congress at time of going to press. Hide market down, account lack of demand for shoes and inroads of leather substitutes. Tallow apparently destined to stay dead until government lifts export restrictions, which the packers say were imposed at behest of big soap manufacturers in order to beat down the domestic price.

Aircraft

Employment in the aircraft industry continues to climb to new peacetime highs, recently passing the 200,000 mark in the airframe branch of the industry alone. More than a quarter of this total are employed in the Los Angeles area.

Of the approximately $1,500,000,000 in prime contracts so far awarded, Boeing holds the largest share, nearly one-third. North American ranks second, with almost one-quarter of the total.

Lockheed is steadily hiring and has started work on a new version of the Neptune. It also is doing experimental work on the R-60 Constitution, the F-90 jet-rocket fighter, and with use of ramjets mounted on F-80 wingtips.

Douglas' C-124, AAF cargo plane similar to the C-70 Globemaster, is in the preliminary construction stage. The DC-6 cargo model is expected to fly during 1949. Its improved AD-2 Sky-raider, Navy carrier attack plane, has been "souped up" and is under development in 18 different tactical versions for various size carriers. North American is reconditioning 95 AT-6 trainers for various foreign countries and is getting into added activity on its F-86 jet fighter.

Northrop will convert B-35 reciprocating engine-powered Flying Wings into B-49 jet bombers and is engaged on an order for R-B-49 Flying Wings. Its fantastic tiny X-4 — a semi-tailless research jet — has been flown successfully, confirming design of the "elevons" incorporated into its swept-back wings, serving as both ailerons and elevators. There is no horizontal tail surface but simply a swept-vertical fin and rudder for stability.

The Chinese government has ordered 200 surplus AT-6's, purchased in Canada, to be reconditioned here for use as trainers of its cadets.

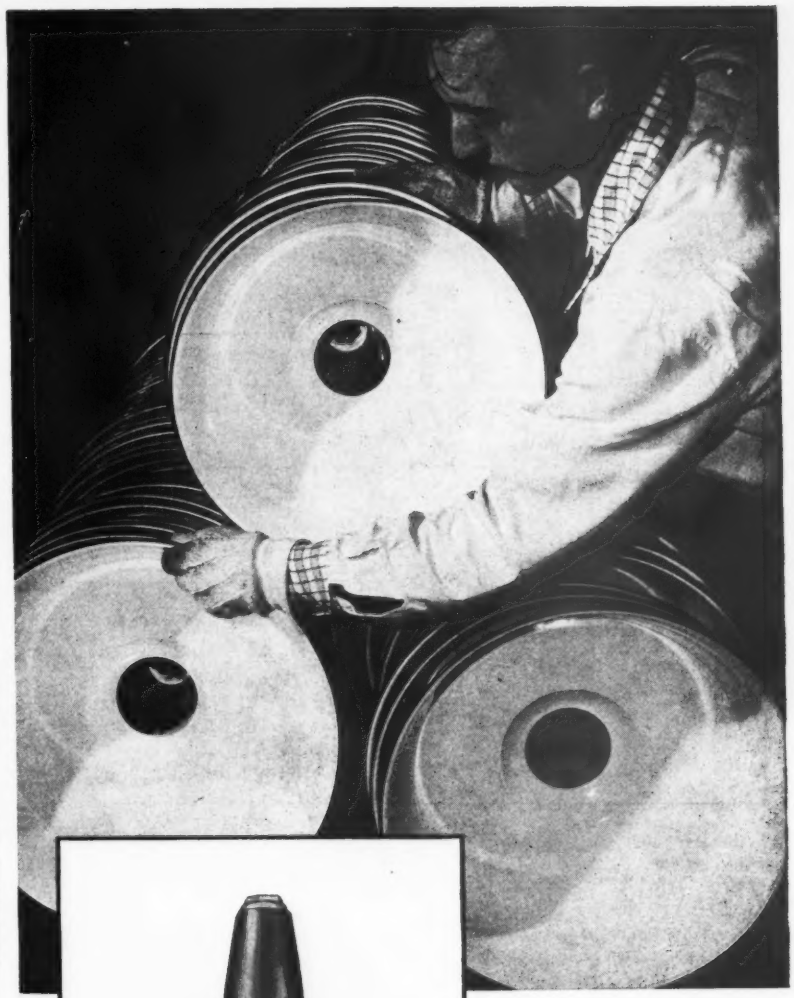
Two important technical developments mark milestones in the industry. One is a way just tested by Curtiss-Wright of braking airliners in mid-air by reversing the propellors, permitting descent safely at speeds exceeding 10,000 feet per minute. The other is an AiResearch-developed self-starter for jet and turbo-prop aircraft engines, thus eliminating the use of heavy storage batteries or other auxiliary power. It uses a tiny 88-pound gas turbine.

Consolidated-Vultee has laid off 600 workers and the total may climb to 2,500 by next June —the result of a gap in schedules between production of 178 Convair liners, now ending, and the start of work on 37 military versions of the big plane.

Apparel

Softening of the market for apparel and textiles has communicated itself from the retail trade to the mill level. Poor pre-Christmas business confirmed the disappointing experience retailers have had lately with growing price resistance and slackened buying. Result has been a sharp decline in inventories of apparel stores, showing canny buying by a nervous trade.

Travelling upstream, the reaction has been a decline of about 30 per cent in unfilled orders for wool fabrics. Business booked by women's wear fabrics is about the same as last year, but orders for men's wear fabrics are down 50 per cent.



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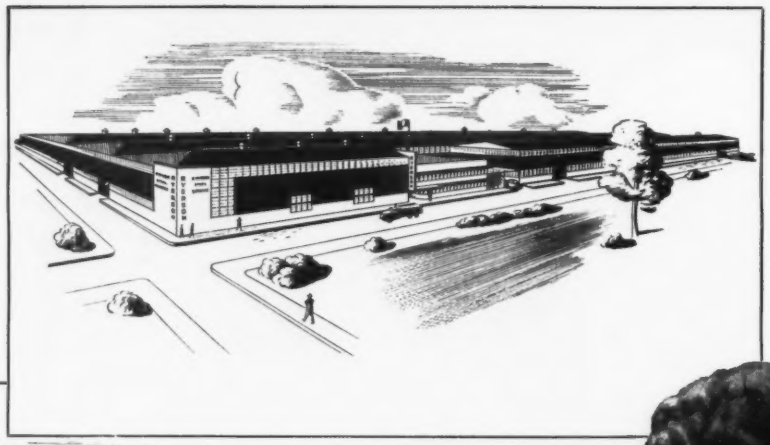

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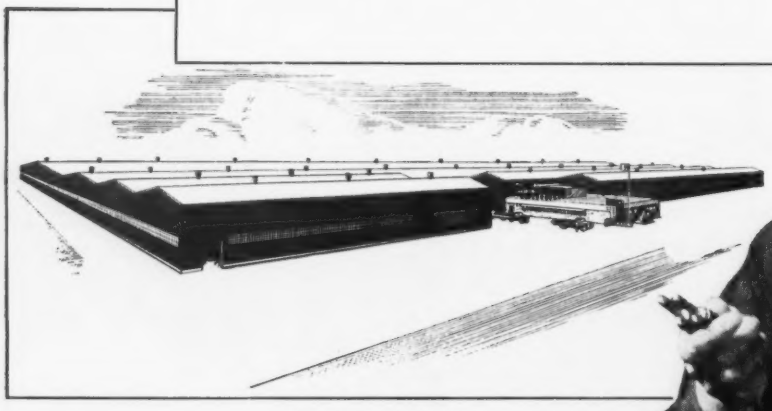

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Solving Basing Point Problem By New Laws Not So Easy

By FLOYD A. BOND
Chairman, Department of Economics
Pomona College, Claremont, California

WHY, it may be asked, do competent people differ so widely in their conclusions as to the legality of delivered price systems?

It would seem a not too difficult task to determine whether or not freight absorption is now legal under the Commission's orders and court decisions. Yet the differences in opinion appear to be genuine. The purpose of the brief analysis which follows is to suggest a possible reason for this uncertainty and to indicate a basic difficulty in solving the riddle through new legislation.

The present law, as stated recently by the courts, may be interpreted differently when applied to delivered price systems because the economic facts themselves, to which the law is applied, give rise to conflicting views.

An examination of a given delivered price system may suggest to some that the firms are absorbing freight "to meet competition in good faith" and suggest to others that firms are systematically "charging what the traffic will bear." Without other evidence, one conclusion may seem just as valid as the other, and which conclusion a given individual draws will depend largely upon his preconceived ideas on the subject.

Suppose, for example, that a non-base mill is located between two base mills. The pricing pattern established by the two base mills would resemble two saucers placed side by side. The non-base mill, located say at the brim of the two saucers at the point where they touch, would charge a higher price at its mill than at delivery points on either side of the mill. It would, in other words, adopt the price pattern established by the two base mills.

Under this pricing system it may be said that the non-base mill is "meeting competition in good faith" at every point that it makes sales, but it can also be said with equal justification in the absence of more facts, that this mill is not actively competing at any point but instead is "charging what the traffic will bear" on all of its sales.

Is this price pattern the result of purely

FEDERAL TRADE COMMISSION MEMBERS DISAGREE

". . . I would like to offer two conclusions for you. The first is that basing point and delivered price systems, as such, are under no special attack. . . .

"Second, it has been too broadly asserted that all delivered prices are unlawful. No Commission order has yet required f.o.b. mill pricing, nor forbidden freight absorption, except in a context of price fixing or destruction of competition, and since, of course, the Commission has entered no such order, the courts have sustained none."—The Honorable Robert E. Freer, Chairman Federal Trade Commission.

"I believe that the multiple basing point pricing system is out as a matter of law. . . .

"I believe that freight absorption is out. . . .

"I believe zone prices are out. . . .

"I believe that an individual universal delivered price system is out." — The Honorable Lowell B. Mason, member Federal Trade Commission.

SENATOR JOHNSON OFFERS NEW LAW

Senator Edwin C. Johnson (Democrat, Colorado), who has succeeded Senator Capehart as chairman of the Senate Trade Policies Committee, has introduced a bill in the 81st Congress to codify and clarify the law and eliminate confusion regarding transportation costs.

Here is what his bill proposes:

1. Condemns and outlaws all price fixing conspiracies in clear terms.

2. Does not restrict the Federal Trade Commission as to how or by what evidence it may prove conspiracy.

3. Permits sellers acting individually in good faith and in absence of a conspiracy to absorb transportation costs when necessary to meet competition in distant markets. Also to sell their products, such as breakfast foods and candy bars, at the same prices to all buyers throughout the country.

4. Whenever the FTC finds a group of sellers guilty of conspiring to fix prices, it may not only order them to "cease and desist," but also order them to each have an f.o.b. mill price for all their products, and give the buyers the choice of buying at either the f.o.b. mill price or at a delivered price which may never be more than the f.o.b. mill price plus actual cost of transportation to the seller.

5. Eliminates any possible interpretation that individual businessmen are required to sell at f.o.b. factory prices, and that the word "price" as used in the anti-price discrimination statute means the seller's "mill net return." Defines price as being what the buyer and seller agree to be the price.

MEANWHILE INDUSTRY SHIVERS

Although some manufacturers in the West believe mill basing is a step forward, most of them feel it will price them out of distant markets, set up local monopolies and put the buyer at the mercy of the seller. Here are typical examples of opinion:

1. A dozen California manufacturers reported to the California Manufacturers Association that mill basing would restrict their ability to compete with other sellers, and force plants and workers into concentrated areas.

2. Several manufacturers in Alameda County reported to the Oakland Chamber of Commerce that they would be priced out of the Los Angeles, Portland and Seattle markets. Others said they would be put at a disadvantage because of distance from steel mills and gave figures as to the amount their unit costs would be increased.

3. An extensive survey by the Seattle Chamber of Commerce brought answers like this: "A Spokane manufacturer changed last year to an f.o.b. basis, which resulted in numerous instances in the delivered cost to dealers within a few miles of each other being different, and tended to give the lower cost town a monopoly on the product in both towns."

FLOYD A. BOND
"Should monopoly be legalized?"

individual action, the result of taking full account of oligopolistic interdependency, or the result of collusion? Can legislation be passed which would distinguish these three situations in practice?

One way out of this problem may suggest itself. In the example above, it will be noted that the non-base mill is realizing phantom freight, instead of absorbing freight, on most of its sales. The phantom freight may be measured by the amount by which the fictitious freight (which is added to the base-mill price in computing the delivered price) exceeds the actual freight cost on each sale. Thus, it is possible, according to this contention, to tell when the firms in a given industry are "meeting competition in good faith."

It is on some such basis as this that some individuals have argued for new legislation to remove the uncertainty created by the Cement decision. Most proposals would legalize freight absorption in some form or other, but would not legalize phantom freight.

Such proposals do not explain, however, how the enforcing agency is to distinguish in practice between "freight absorption" and "phantom freight," and how that agency is to prove that the distinction it makes is a valid one. Could not situations exist in which it would be impossible to make the distinction and thus impossible to differentiate between the three situations indicated above?

Suppose a law legalizing freight absorption were adopted and applied to the non-base mill in the above illustration. What would prevent that mill from announcing a base price equal to its former mill-door price under the basing point system? It would thus become a base mill and proceed to "absorb freight" on all sales beyond the door of its mill, yet would continue to charge the same prices at all delivery points that it previously charged under the former basing-point system.

Would this be legal under the new law? If not, could the Federal Trade Commission establish proof of illegality? And if so, could the same two questions be answered in the affirmative if the pricing policy established by the above mill after the law was passed were a bit more subtle —such as setting a base price slightly below the one it established above, so that it would begin to "absorb freight" beyond a limit of say 10 miles from the plant? How can you determine?

Could the Commission prove that the company should begin to absorb freight at 15, 25, 40, or some other number of miles from its plant instead of 10 miles? A negative answer seems inescapable and suggests the impossibility of determining without other evidence whether a given price pattern is the result of individual action, oligopoly, or collusion.

If this analysis is correct, it would seem to be impossible to clarify the law on freight absorption without at the same time making it considerably more difficult for the Commission to prove monopolistic conduct. Thus, the legislative problem resolves itself into the question of whether or not the Commission should be entrusted with the power it now has under the Cement decision, or whether it would be better to run the danger of legalizing some monopoly conduct instead.

NEW PRODUCTION TECHNIQUES

Exploring The Possibilities In Light Metals Welding

By A. R. HARD
Research Engineer
The Division of Industrial Research
Washington State College

WHEN we consider the physical and chemical properties of the light metals it is not surprising that they have been unpopular with some welders.

Both melt at a temperature below visible color change. Equal weights of aluminum, magnesium or steel will absorb about the same amount of heat before melting, but if equal volumes are compared, aluminum will melt after absorbing about one-third the heat required to melt steel, and magnesium about one-fifth.

This is true only if we consider melting of an entire piece. Most welding processes require melting of a small percentage of the total volume. The light metals are relatively good conductors of heat, making it more difficult to melt a small spot. Steel reaches a plastic condition long before it melts. The light metals melt suddenly within a narrow temperature range.

Some welding processes depend on electrical resistance of the material for generation of welding heat. The light metals are good conductors of electricity. Chemical activity of both light metals is rather high. Even below welding temperatures they unite with oxygen to form stable oxides that are difficult to break down.

• Spot welding aluminum alloy panel on condenser discharge machine. (Mr. Hard at left.)

Need Different Equipment

Equipment that is best suited to light metals welding usually differs from that used for steel. In spot welding, higher currents are necessary to offset the high electrical conductivity. Lower currents of long duration are no substitute because the high thermal conductivity will often pull the heat away as fast as it is generated.

Although some shops are spot welding aluminum without cleaning, consistent welds cannot be produced unless all the oil and oxide film is first removed from the surfaces. Suitable cleaning processes have been developed for both aluminum and magnesium.

Flash welding generally requires no end or surface preparation. Often a steel flash welder can be modified by providing higher platen speeds and more accurate current timing.

The inert gas shielded arc torch was originated for use on magnesium. Its use on aluminum is expanding rapidly and it is finding some application in copper, copper alloys and stainless steel. The essentials of the torch are a tungsten electrode surrounded by a gas cup into which an inert gas such as helium or argon is fed. This

makes welding in an inert atmosphere possible.

Its principal advantage is the complete elimination of welding flux. Filler metal is supplied either by adding rod or by joint designs in which the parts themselves supply the filler. Although the light metals can be welded with oxyhydrogen or oxyacetylene the fluxes necessary are quite active chemically and unless neutralized after welding may lead to corrosion.

Arc welding of aluminum is possible, using standard direct current equipment and a flux coated rod. Generally this is restricted to heavier sections because it is not as easily controlled as the inert gas shielded torch.

Comparative Tests Made

In order to compare some of these processes we selected two aluminum alloys, 3S ¾H and 24ST Alc. and one magnesium alloy Dowmetal MH, all of the same gage —.051. The 3S ¾H is representative of the lower strength aluminum alloys that do not respond to heat treatment. Increase in its physical properties is obtained only by cold work or rolling. The 24 ST Alc. is representative of the heat treatable aluminum alloys that respond to quenching and ageing. The Dowmetal MH magnesium is the same type of alloy as the 3S ¾H aluminum and is typical of the magnesium alloys available in sheet form. Some of their typical mechanical properties and their chemical compositions are shown in the accompanying table.

ALLOY	Ultimate strength lb./sq.in.	Elongation percent in 2 inches	Electrical conductivity % copper	NOMINAL COMPOSITION Manganese	Copper	Magnesium	Aluminum
3SO	16,000	30%	50%	1.20			R
3S ¾H	25,000	5%	41%				
Alclad 24SO	26,000	19%	50%	0.6	4.5	1.5	R
Alclad 24ST	64,000	18%	30%				
Dow MA	33,000	17%		1.20		R	
Dow MH	37,000	8%	35%				

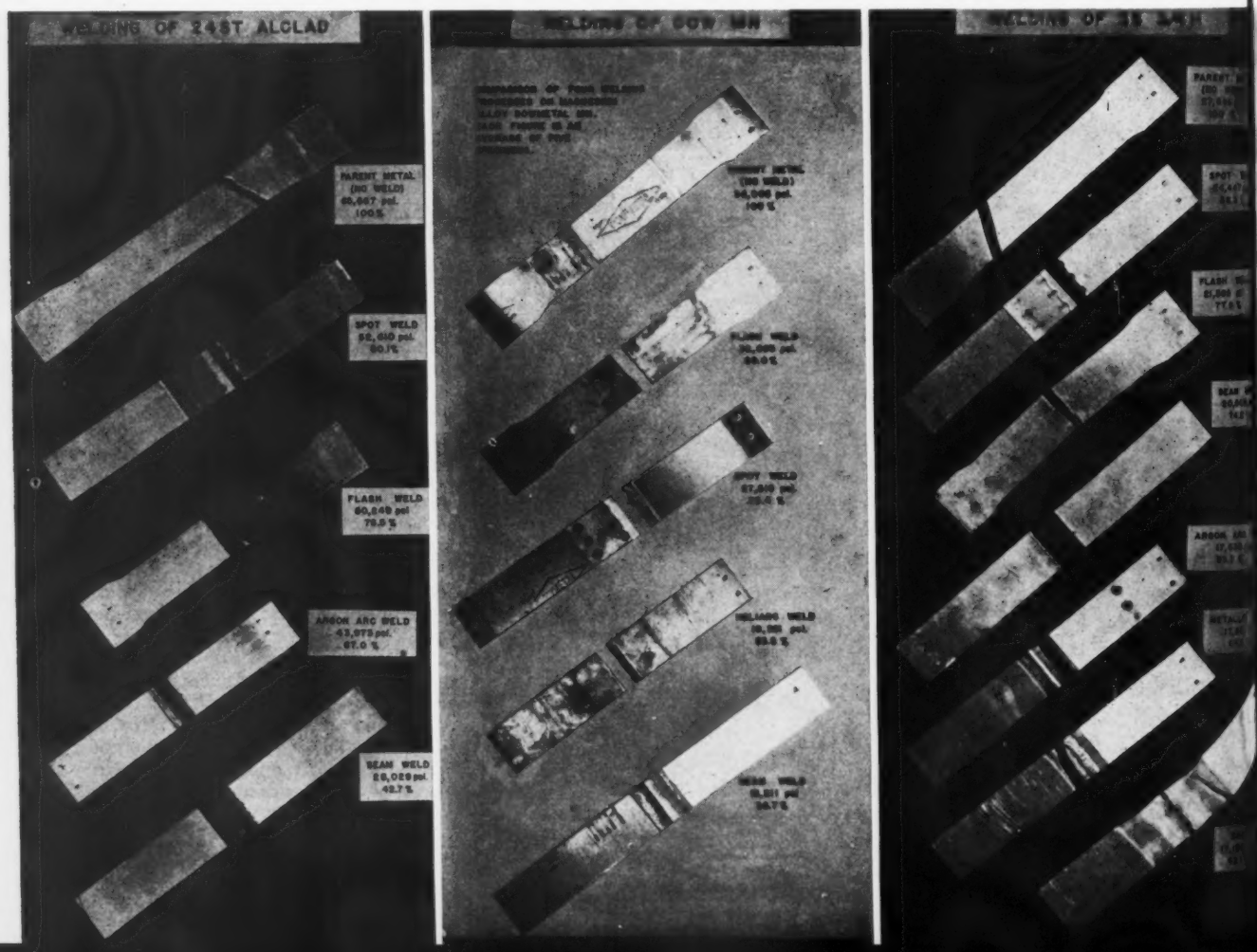
Broken specimens of the 3S ¾H are shown in an accompanying illustration. The parent metal strength was 27,695 Psi., well above the typical of 25,000 Psi. The higher figure, however, is used in computing efficiencies of the welded specimens.

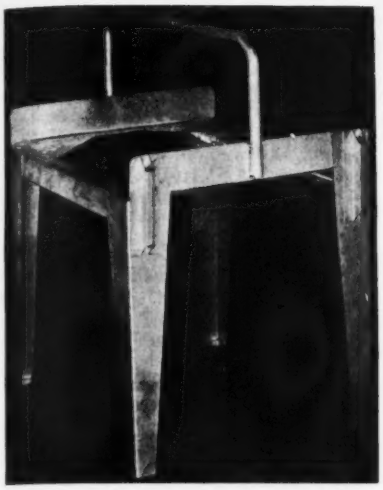
Note that none of the failures are directly through the welds. All the failures started in an annealed zone adjacent to the weld. If we divide the typical value for 3SO by the value for 3S ¾H given in the table we get 64 per cent, which agrees closely with the values obtained on the argon arc, the metallic arc and the braze specimen.

All these specimens contain a zone of completely annealed material. Although base metal of the brazed joint did not reach the melting point it was well above the annealing temperature (750°F.) for a longer period of time than any of the other specimens. This results in a very wide annealed zone.

In the spot weld joint the annealed zones are small and far apart. Unaffected metal remains between the welds.

In the flash weld, part of the cold work lost during the brief heating cycle has been replaced by the upsetting action which takes place at the end of the weld cycle. Because a conventional seam welder was not available the seam weld was made by attaching an indexing table to the spot





• Three processes combined — torch brazing, spot welding, inert gas shielded arc.

welder. The same machine setting was used for both the spot and the seam weld. The seam weld actually contains a greater number of welds per inch but failed at a lower figure partly because of the more continual annealed zone.

Of the joints illustrated, all but the spot weld are pressure tight. Equipment cost is roughly indicated by the position of the specimens in the illustration, ranging from a few dollars for the brazed joint to several thousand for the seam, flash, and spot. A comparison of welding speeds is dangerous because it depends too much on the particular application.

Broken specimens of the 24ST Alclad are also illustrated. Here the spot weld is again on top with the flash weld not far behind. The choice of .051 gage material does not show the flash welding to its best advantage because there was a tendency for the parts to overlap. Stronger flash welds can be obtained in the more concentrated sections. Although the argon arc weld is included its use on this alloy is not recommended because the weld zone is quite brittle and low in corrosion resistance.

The ratio of hard to annealed (from the table) would indicate a strength of 41 per cent. Some response to the quench effect of the cold metal surrounding the weld is evident. This specimen was allowed to age four days at room temperature before it was tested. Testing a lap specimen of the seam weld type introduces a bending moment near the weld. The less ductile 24S does not withstand this treatment as well as the 3S did. Even so, the ultimate strength is higher in actual pounds per square inch.

Results with the Dowmetal MH specimens closely parallel those for the 24ST Alclad, even though the two alloys are basically different in nature. The seam weld is again influenced by the low ductility of the material. The argon arc weld fails at a lower figure than the values of the table would indicate, but is in line with existing data for a similar alloy.*

No suitable brazing processes have yet been devised for the Dowmetal M or the 24ST.

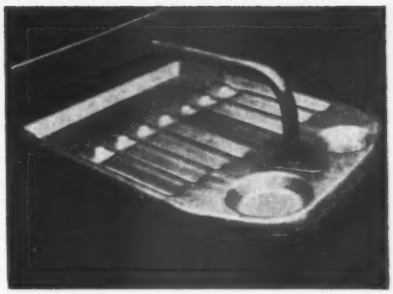
Shown also are examples of jobs that can be accomplished by using a combination of welding processes on a single production problem.

Except for the handle bracket the berry picking stand is entirely spot welded. The handle and bracket assembly was made by the inert gas process and then spot welded to the stand. Torch brazing of this assembly is another possibility. Welding of the handle directly to the stand by the inert arc process has been avoided because the stand portion is 24ST Alclad.

By using 3S handle brackets it is possible to satisfy the welding requirements of each material involved. For those shops not equipped for spot welding it would be possible to redesign the stand and make it entirely of tubing. One of the arc processes, torch welding, or torch brazing would then be feasible.

The hospital hypodermic tray illustrates a combination of three processes. The tubular handle of 52S was torch brazed to a triangular piece of 3S. The 3S patch was then spot welded to the 24ST Alc. base. This procedure eliminates the possibility of a complete anneal zone. The 2S towel rack was welded to the base by the inert gas shielded arc process.

*"Designing With Magnesium." Table 20, p. 214. American Magnesium Corporation.



• Everything spot welded except handle bracket. Stand could be made of tubing.

Two general rules have been violated in construction of this tray—tension loading of spot welds and fusion welding of 24S. Spot welds in aluminum generally should not be subjected to tensile loading, but since the loads involved in this case are very low no serious effect is expected. Fusion welding of the 24ST Alc. should give little trouble because the possibilities of corrosion are remote and the somewhat brittle weld is protected by the soft 3S alloy rod.

It is difficult to predict future trends of the rapidly expanding welding industry. Present interests indicate concentration on development of light metal processes which do not require the use of flux. Fluxless soldering is becoming possible. Sufficient demand by industry may lead to improvement of existing automatic processes.

• Inert gas shielded arc welding operation on a box beam of ½-in. magnesium alloy plate.

Incentive Management Works When You Work At It

By T. P. PIKE
Pres., Thomas P. Pike Drilling Co., Los Angeles

IN GETTING an Incentive Management program under way, the step I consider first and foremost should be an honest and searching self-analysis on the part of management and owners.

Why are we in business? Simply to make money? Or do we acknowledge a responsibility toward employees and consumers in addition to management and owners?

Do we want our employees to attain a sense of dignity, satisfaction and security through working harmoniously with others in a well organized business at fair wages? Are we willing to afford our employees the necessary opportunities and incentives in the form of management sharing, employee benefits and profit sharing?

Are We Willing?

Above all, are we managers and owners willing to work to create these conditions? And finally, are we willing to say that we will? It is absolutely essential that owners and top management be completely sold on the principles of Incentive Management before they can sell it to their employees.

When the owners and managers of our company were able to honestly answer the above questions affirmatively, we put our Incentive Management program in writing —on record—posting it on every rig for all to see.

The next step was to gain the interest and confidence of our men in the overall methods and objectives of the plan. This was not easy nor accomplished overnight. We had to overcome a certain amount of natural skepticism by repeated affirmations of our sincerity and willingness to do everything we had said we would do. We talked to our men, singly and in small groups, about our proposed new way of life.

We next took the most important single step in our plan, which was to form what we chose to call the Advisory Board. This is our management-sharing group and it is a good one. Its membership consists of the president, who acts as chairman, two vice-presidents, treasurer, drilling superintendent, head mechanic, all tool pushers and one crew representative elected from each drilling rig.

The Advisory Board meets monthly at dinner and is authorized to discuss and make decisions on matters concerning any and all phases of the company's entire operation. It has made such important decisions as determining that an employee must work for at least nine months of the current fiscal year before he is qualified to participate in Profit Sharing, and it has voted to adopt certain employee benefit programs such as Blue Cross and Group Life Insurance.

Two-way Communication

Our Advisory Board has proved to be a very efficient channel of two-way communication both up and down for the free interchange of ideas. It has provided the opportunity for men and management to become acquainted, which has developed real understanding and mutual confidence. It is the group to which we give verbally, once a month, company financial data, especially profit and loss figures. We encourage questions and hold back nothing.

Participation on the board provides the opportunity for the worker to gain recognition for himself and contribute his ideas as positive factors in the operation of the business. It enables him to share information on matters traditionally considered as top secrets for management only.

Thus the basic human need for recognition and status is satisfied. I could list countless suggestions for increased efficiency and elimination of waste made by our men through the Advisory Board for

• THE TEAM—Front row: T. P. Pike, pres.; O. C. Avery, derrickman; Ernie Edmonds, driller; Ted Alleman, Bob Miller, mechanics; Milo Webb, World Supply Co.; Winston Murphy, mechanic. Second row: Clyde Simpson, vice-president; Sam Polan, derrickman; Charles E. Riemann, secretary-treasurer; Clarence Cramer, W. A. Jones, Verne Coats, all tool pushers. Rear row: Bill Carpenter, derrickman; R. G. Douglas, driller; Otis Coppock, derrickman; Tex Patterson, tool pusher; Les Crabtree, driller; John Fowler, Ralph Smith, Joe Smith, tool pushers; Joe Collum, driller; H. G. Haney, vice-president; John Swain, tool pusher.

which the worker was given due credit in the monthly bulletin and a cash award, ranging from $5 to $200.

They Get Job Satisfaction

Most important of all, it has provided the opportunity and incentive through which our men are realizing job satisfaction and making real progress in their own self-development.

When the plan started, minutes of each Advisory Board meeting were carefully taken and sent out to each employee in mimeographed form. This practice has blossomed into a monthly house organ called "The Monthly Tour" edited by Ann Taylor, Lois Pederson, Elsie Jirousek, Marie Bell and Mary Lou Walter, all of whom are in the Los Angeles office.

It is replete with jokes, personal biographies, news items and pictures of employees. It features statements on work in progress, prospects for new work, a section devoted to safety, company financial information, and an analysis of the downtime incurred each month by each rig and pusher, etc.

In order to extend our management-sharing program right down to the basic unit of our business, the five-man drilling crew headed up by the driller, we have just set up "Junior Advisory Boards" headed up by the tool pusher for each rig. These units function in the same manner as the Senior Advisory Board and the results of their monthly informal meetings are carried to the senior board by the elected crew representative and tool pushers. Thus, we are attempting to channel the collective knowledge and experience of our entire organization in the stream of management.

As the final step, for the financial incentive, we have established a profit-sharing plan whereby at the end of each fiscal year we distribute in cash a predetermined percentage of our profits, 25 per cent after taxes, to each eligible employee. At the present time the exact amount of each employee's participation is being determined by the Advisory Board. The aim is to arrive at a fair and equitable distribution between the various job classifications that will most closely represent each employee's contribution to the success of our operation.

The results of our first full year under Incentive Management have been gratifying. The morale of our organization is high. Our labor turnover has decreased. We have a 65 per cent increase over 1947 in volume of sales; and our net profit, after taxes and profit sharing, was substantially higher than 1947 and second highest in the history of our business.

Just a Beginning

We are fully aware that we have but made a small beginning in the field of Incentive Management and that contract drilling is a hazardous business involving large financial risks. But we do believe that the best means of minimizing these hazards and risks is to inject the spirit of teamwork and partnership into our drilling crews, pushers, superintendents and management.

Incentive Management will work if the entire work force wants it to work. We, in Pike Drilling Company, are very much alive to the challenge it presents and are willing to accept its responsibilities.

Western Pulp Mills Eliminate Stream and Air Pollution

Steps taken by industry in California to eliminate stream pollution have been explained in detail in recent issues of *Western Industry*, and an analysis of the Los Angeles smog problem will be published shortly. Here a report from the Pacific Northwest is given.

AN ANSWER to the stream pollution problem of paper mills has been found by Weyerhaeuser Timber Company in an installation at the sulfite mill of their pulp division at Longview, Washington, which also recovers waste liquors and utilizes them for providing heat and power.

Sulphite pulp ordinarily is processed by cooking wood chips in a calcium oxide base liquor resulting from the action of sulphur dioxide upon limestone in the presence of water. A ton of waste organic solids is produced as a by-product for every ton of pulp.

The new system involves a seven-stage cyclical process which substitutes magnesium oxide for calcium oxide in the cooking liquor, evaporates and burns all waste cooking liquor and transforms the residual dust and gas into a strong acid for re-use in cooking of chips.

All the waste cooking liquor, which runs 12 to 14 per cent in solid content of lignin and carbohydrates from the wood not usable for pulp, is evaporated until it reaches a solid content of about 50 per cent. The liquor will then burn under a boiler.

Multiclones collect the burned magnesium oxide while the sulfur dioxide is carried off in flue gas. The magnesium oxide dust is made into a slurry with water, capable of absorbing the sulfur dioxide from the combustion gases. Free sulphur dioxide is built up to a point where there is a suitable combination of magnesium bisulfite and free sulfurous acid to return to the pulp mill's present hot acid system ahead of the digesters.

Much of the slab wood and wood trim heretofore used to provide hogged fuel to produce the power for the sulfite mill will no longer be needed for that purpose, and will be utilized instead as raw material for a new kraft mill.

The new process will be made available to the nation's pulp industry under licenses granted by Babcock & Wilcox Company. The process is patented by George H. Tomlinson of the Howard Smith Paper Mills, Ltd., who discovered the possibility of using magnesium oxide with the resultant recovery of chemicals. Babcock & Wilcox worked with the Howard Smith mills on boiler designs suitable for this process, and meanwhile Weyerhaeuser had been independently investigating the possibilities of a magnesium base sulfite acid.

The three companies finally decided to pool their efforts and have Weyerhaeuser install the first full scale commercial mill.

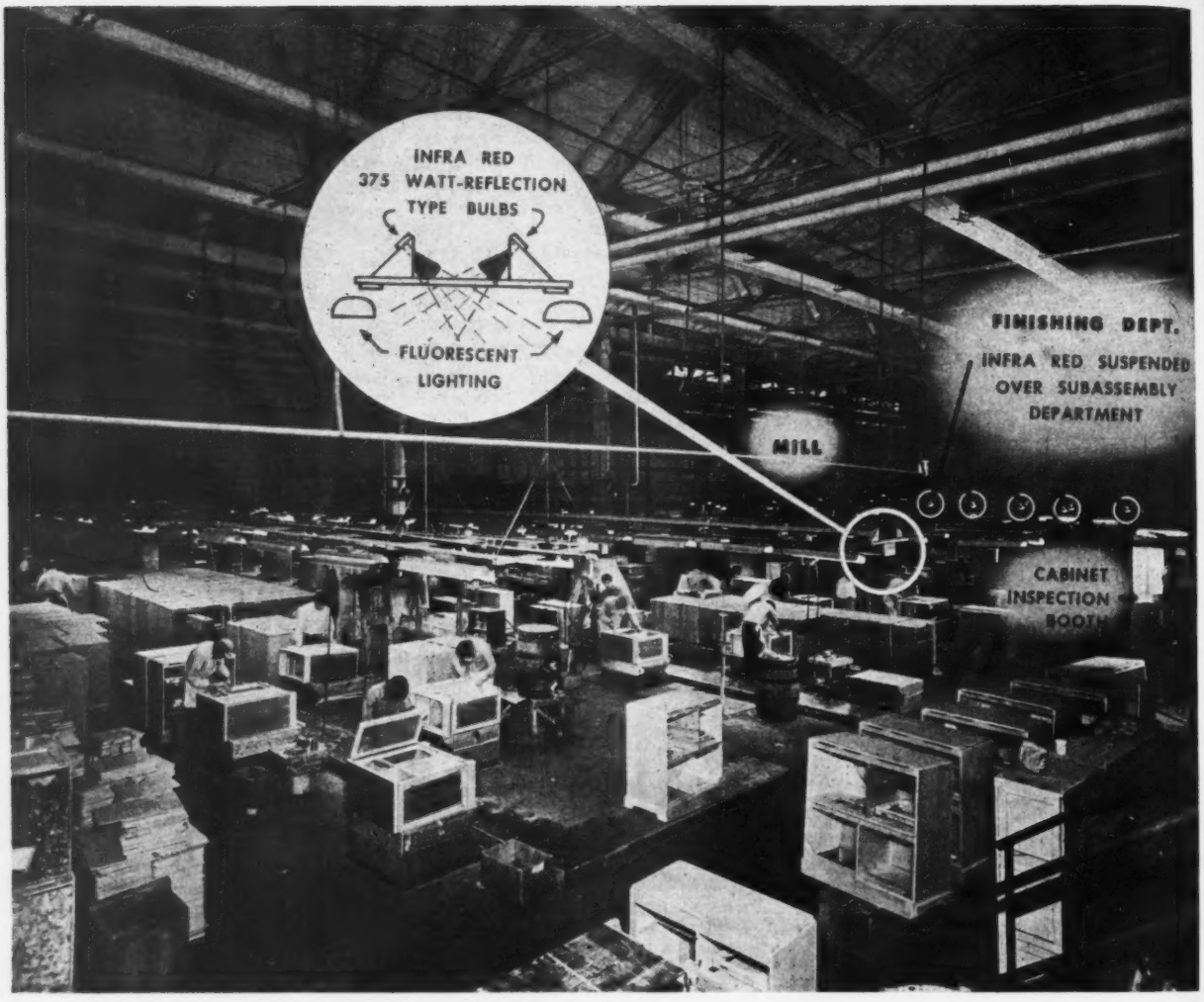
ABATEMENT of atmospheric pollution by blowpit gases in a sulfite mill, in addition to recovery of both heat and sulfur dioxide from these gases, has been accomplished by Soundview Pulp Co., in their big mill at Everett, Wash.

The recovery is about 950 pounds of steam (225 pounds to 40 super heat) and 40 pounds of sulfur per air dry ton of bleached sulfite pulp. Although the process originally came from Sweden, development of a new type of stainless steel in this country assured the success of the project.

Under conventional methods of blowing a sulfite digester, the gases escape into the atmosphere. Soundview's method is to condense the steam, recover the heat from the resulting hot water and use it to heat up both the acid going to the hot acid accumulators and the water required for the bleach plant. The cooled water is then re-used in the condenser. Gases leaving the condenser are cooled and the SO_2 is absorbed by water in an absorption tower and stack and used as make-up in the acid plant.

The big problem was to overcome the corrosion of the unusually large vessels with large fittings required by the process. It was solved by the recent availability of Type 316 stainless steel with a maximum of .03 per cent carbon

American Heat Reclaiming Corp., New York, representing the Rosenblad Heat and SO_2 Recovery System of Sweden, installed the system.



Infra Red Heating Changes Cold Barn Into Warm Working Spot

IT IS a paradox of the radio cabinet business that the period of greatest production must necessarily fall at a time when it is most difficult to produce these cabinets.

Not only does the damp, cold winter preceding the Christmas production rush have an adverse effect on cabinet finishing, but also creates a personnel problem. Cold hands and a chilly atmosphere create a labor problem as well as a manufacturing problem. Hence the interest in Hoffman Radio's solution of the problem by infra red heating.

The Hoffman Corporation, Los Angeles, devotes approximately 80,000 square feet of floor area to the exclusive manufacturing of radio cabinets. This building, originally constructed as a streetcar barn, has a beam height of 24 feet and a comb height of approximately 45 feet and therefore, even though the building is ideally suited in many respects, there was an almost insurmountable problem relative to space heating. In addition to the extreme height and vast open space, seven spray booths and two huge mill exhaust systems are constantly exhausting air from the building.

Two years ago, W. L. Maxson, maintenance superintendent for all Hoffman plants, was directed by President Leslie Hoffman to correct this condition. A general survey of the plant was made, a consulting engineer brought into the picture, but from the start standard methods proved impractical.

In the first place, costs were estimated to run in excess of $50,000. Installation of a vast network of piping and other equipment would be a detriment to production. Gas was eliminated as a source of energy from the start because of inadequacy of service in the particular area, and from the investment point of view, the productive period for this heating system would only be for a few short months. The balance of the year a huge investment would sit idly by.

Following out Mr. Hoffman's conception that Western industry must utilize every natural advantage in order to become

a major producing center, Mr. Maxson called in the Los Angeles Bureau of Water & Power for a consultation regarding the use of infra-red as a source of energy for personnel as well as general area heating, and within a matter of days began the installation of one of the first all-electric heating systems in Los Angeles. In the two years of application, it has proven a very practical source of heat and is continually being expanded to accommodate additional production lines and facilities.

In addition to the personnel heating problem, there are certain periods during the southern California winter when an action called "blushing" occurs in a finish. This is caused by a combination of low temperature and humidity, and in many cases, forces either the shutdown of a plant or the use of certain retarders in the finishing material which slow the finishing processes considerably.

By the use of infra-red in "staging" areas of the finishing department, the raw cabinet is maintained at a practical temperature for the application of the various stains and finishes. These staging areas are a part of the finishing operation, which consists of spray booths, hand rubbing areas and electrically heated dry rooms. The result of this careful consideration of the finishing processes has given Hoffman an enviable reputation as a builder of fine radio cabinets.

In addition to the pleasant warmth imparted by infra-red, an additional source of light is made available during the darker and colder days so that the delicate sanding and finishing operations can be maintained at the same degree of excellence.

The cost of operation of such a plant would, on first thought, be prohibitive. However, a study of actual costs seems to indicate an almost negligible change in the electric billing. This is accomplished by reason of the fact that the increased power consumption has brought the entire plant into a four mill electric rate and utilizes much more effectively the two 400-amp. lighting services.

Low cost electric energy is one of many natural advantages enjoyed by Western industry. Enterprising manufacturers such as Hoffman Radio are rapidly applying this and other "naturals" in their successful effort to widen the distribution area and increase local sales of Western products.

West's Ingenuity Challenged By U. S. Aircraft Program

By LELAND D. WEBB
Vice-President and Western Regional Manager
Aircraft Industries Association

PACIFIC COAST airframe manufacturers are being called upon to build about two-thirds of the fast new planes ordered by the U. S. Air Force and Naval Air Service under the new military expansion program authorized by Congress last spring.

By wartime standards this peacetime production program is small. Since Congress approved it last May, the two services have ordered 2,451 planes from the major West Coast airframe makers — only a fraction of the 139,791 planes the same companies built for World War II.

But the new orders do face the West Coast aircraft industry with a real challenge. This is due in part to the vast difference in the national economy between 1940, when World War II expansion got under way, and the present day. But chiefly the challenge arises from the fact that today's planes are much larger, fly considerably faster and higher, and are far more intricate than wartime models.

In 1940, for example, the military planes built by West Coast manufacturers had an average weight of only 3,936 pounds. This average weight increased gradually during the war to 4,305 pounds in 1941, 9,689 pounds in 1943, to 19,602 pounds in 1945.

More Weight, More Problems

This growth in average weight, of course, reflected the shift in emphasis from lightweight trainers to heavy bombers during the war. But every added pound added to the difficulties of design and manufacture, for the increase was essential to provide improved performance in speed, altitude, firepower, bomb capacity, and accuracy. In 1944 the Western manufacturers turned out 12,000 four-engined planes, each 30 per cent heavier than its prototype.

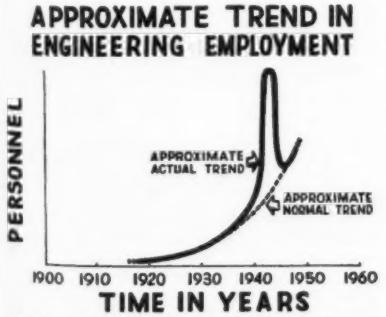
This cycle of improving performance and increasing weight in airplanes by no means stopped with the end of the war. The 13 different Air Force types ordered in recent months from West Coast firms have an average gross weight of 40 tons, a considerable jump over wartime models.

One Western company, for example, now is building a light jet bomber for the Air Force with dimensions roughly comparable to those of the medium bomber it turned out 10 years ago. Today's bomber, however, weighs 82,600 pounds compared to the 30,000 pounds of the older plane. It has a top speed in the 550-mile-an-hour class, compared to 215 miles an hour for the older plane. It packs thrust in its four jet engines equivalent to 22,000 horsepower, compared to 2,400 horsepower in the two conventional engines of the medium bomber. It carries 10 tons of bombs instead of 4½.

Engineering man-hours required to build the experimental medium bomber a decade ago totaled 103,700. Twelve times as much engineering effort — 1,263,000 man-hours —was needed to achieve the high performance of the new bomber.

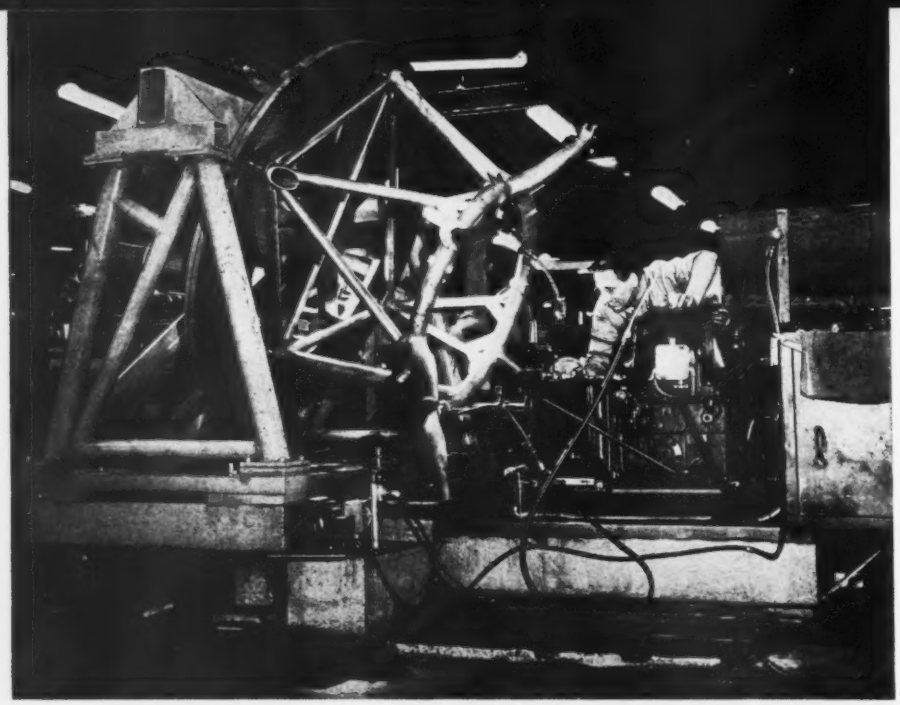
About two-thirds of all new types ordered from Western manufacturers utilize relatively new jet power plants rather than conventional reciprocating engines which have been brought to peak development and efficiency only after some 30 years of effort.

When it is recalled that no American jet plane was developed in time to see combat service in World War II, it is clear that the aircraft industry has been thrust



• New developments, problems again make demands on engineering manpower, a consistent trend much accentuated in wartime.

• This gives a significant idea of the magnitude of new research requirements. Not much hope for improvement in near future.



• Boeing uses this jig (left) for holding engine frame in various positions to assure accuracy in drilling holes by the boring mill (at right), which remains stationary.

into a technological no man's land. Within some five years the manufacturers of airframes, engines, radar, air pressurization and conditioning equipment, and instruments have had to push forward their science as much as automotive science has developed within 30 years.

Faster and Faster

Take, for example, speed as the outstanding performance improvement made possible by the tremendous increase in power afforded by the jet engine. During four decades of flying from 1905 to 1945, the increase in top speed of the swiftest planes had been gradual—averaging about 10 miles an hour each year. The 1945 record with the fastest propeller-driven combat plane was about 470 miles an hour. Within the past three years, the top speed has been shoved upward to more than 670 miles an hour — an average of 67 miles an hour each year.

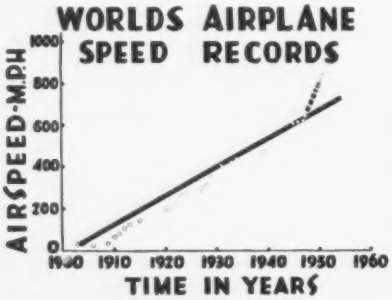
Technical problems growing out of this big boost in speed include new configurations, greatly increased strength requirements, new types of structure, and many new types of equipment.

For aerodynamic reasons airplanes traveling 11 miles a minute must have extremely thin wings that offer minimum drag. Yet these wings must bear the shock and strain of high speed maneuvering and air turbulence far greater than slower flying craft. With less room inside the wing for structural support, strength must be built into the skin itself through such devices as tapering the thickness of the skin or double skins. All such devices are costly in time, money, and fabricating equipment. New and harder-to-work materials must be used.

Thin wings also leave little space to house such things as fuel tanks and retracted landing gear. They must be packed into the fuselage already crowded with its engine, cockpit, air ducts, heating, refrigerating and pressurizing equipment, guns, radio and radar sets, control cables and pipes, thousands of feet of connecting electrical wiring, and scores of other things.

Higher and Hotter

The refrigerating unit itself is a device that represents many years and hundreds of thousands of dollars in development. At 670 miles an hour the friction between the outer air and an airplane surface is so great that it raises cockpit temperature by 80 degrees. Additional heat from radiation of the sun and from electrical equipment makes the cockpit temperature unbearably hot without a supply of cool air.



• Average yearly increase of official speed records only 14 mi., but may change with jet power and supersonic aerodynamic developments. Problems increase tremendously as speed of sound is reached. Newer designs require pressurization, heating, refrigeration, improved oxygen equipment, personnel ejection, survival provisions after ejection, and speed control or descent brakes.

Refrigerating units on today's fast jet planes weigh only 16 pounds. But they can draw hot compressed air from the jet engine and cool it 500 degrees before passing it into the cockpit.

This refrigerating problem increases as speeds pass into the supersonic ranges. If an airplane could reach a speed of 1,500 miles an hour at, say, 30,000 feet, an uncooled cockpit would have a temperature of nearly 400 degrees as the result of air supply from the turbine, outside air friction, solar radiation, and internal equipment heat.

Pilot Under Pressure

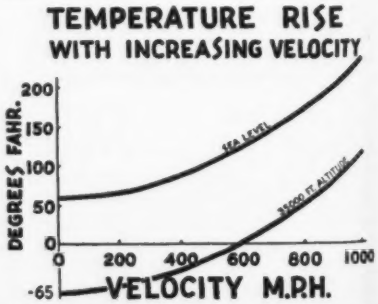
Cockpit air also must be pressurized, for the great power of the jet engine makes it possible for a plane to climb quickly to high altitudes. Rapid changes in atmospheric pressure and rarefied air at high levels would be intolerable without pressurization. Air for this purpose is taken from the compressor section of the turbine and this is the principal reason for requiring cockpit refrigeration.

Like the pilot, all materials, fluids, and mechanical equipment must be able to function at altitudes from sea level to 50,000 feet, at temperatures from 65 degrees below zero to 160 above, and in flights and maneuvering at speeds through and beyond the sonic range.

At 21,000 feet, for instance, there is insufficient oxygen to support the combustion of a candle flame. At 32,000 feet with outside temperature 65 degrees below zero, gasoline boils if not pressurized. The blood in the human body will boil at 63,000 feet unless the living quarters are pressurized. And at 250,000 feet, an altitude penetrated many times by V-2 type rockets, sound waves no longer are propagated because of the increased distance between molecules.

Astonishing Stress Problem

Even materials used to build airplanes lose strength with the increased temperatures resulting from air friction added to solar radiation. At a speed of some 1,100 miles an hour at sea level the temperatures



• Aerodynamic heating is an outstanding problem. At sea level or above 500 miles an hour, cabin must be refrigerated; at 800 miles or near sea level, hydraulic system, radio, etc., also, reducing structural integrity about 10%. At 35,000 feet altitude, as lower curve shows, temperature can be reduced, but even then cabin temperature will exceed 100° F. at 1,000 miles per hour.

inside an airplane, if not cooled, would rise to 300 degrees on a hot summer day. At this temperature the allowable stress of various plastic materials such as plexiglas and lucite would drop to zero, according to tests made by a Pacific Coast aircraft plant. Nylon loses 33 per cent in allowable strength, phenolic moldings 32 per cent, 75-S aluminum alloy 60 per cent, 24-S aluminum alloy 13 per cent, magnesium 28 per cent, and even chrome molybdenum steel 8 per cent.

Behavior of airfoils and control surfaces, well charted at subsonic speeds, cannot be predicted with certainty at sonic and supersonic speeds. New configurations must be subjected to exhaustive high-speed wind tunnels to collect data sufficient for aircraft designers.

Manufacturing Problems

Solutions to each problem seem inevitably to raise other problems not foreseen at the start of a project. It takes time to work out designs, manufacture and test new articles. And it is impossible because of the experimentation involved to schedule it accurately in advance.

Problems of the engine and equipment manufacturers, located largely in the East and Midwest, are another similar story. But it is the responsibility of the airframe manufacturer to fit together into a smoothly functioning unit all the equipment supplied by others.

Tests Reveal Quirks

Some equipment that functions perfectly in the laboratory develops unforseen difficulties in flight tests. Each prototype airplane becomes a laboratory itself for testing equipment in flight. Radar, radio and electrical equipment that operate satisfactorily by themselves must function without interference when mounted in the same airframe.

Such problems sometimes take weeks and months to work out. Flight test time to prove the dependability of new designs under all conditions has increased enormously with the huge increase in performance.

Testing Takes Time

More than half the engineering effort that went into the prototype of a new West Coast jet bomber represented work on aerodynamics, wind tunnel testing, thermodynamics, vibration and flutter, flight test, structural analysis and testing, and research laboratory experiments.

Most serious production problems today are arising from this technological revolution that has affected nearly all phases of aircraft manufacturing. In addition, of course, the West Coast aircraft industry has been affected by overall economic factors that have affected all the nation.

Shortages of raw materials have been noticed especially in the alloys of aluminum and other materials used in airplanes. Labor disturbances both within the aircraft industry and in coal, railroad, shipping, and suppliers' plants have adversely affected airplane production.

Each pound of today's advanced airplanes now requires about twice as many labor hours as did an airframe pound of World War II types at comparable ship numbers. But most of this increase is the result of greater complexity rather than a decline in labor productivity. Manpower has not been a serious problem in aircraft production since the end of the war, although West Coast plants currently are in vital need of engineers and certain skilled craftsmen.

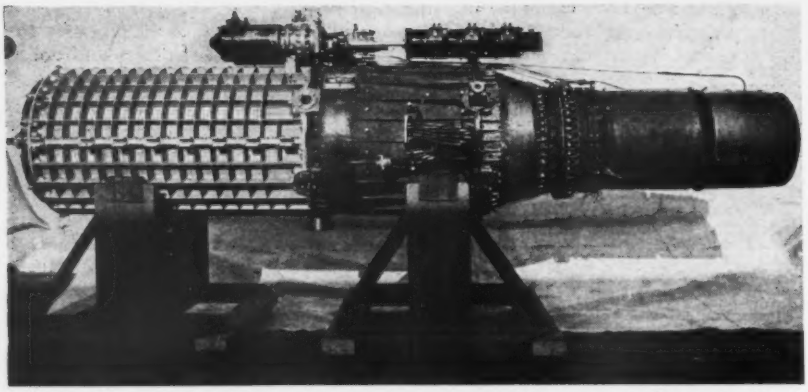
How to Find the Best One

Recently the Air Materiel Command and Navy Bureau of Aeronautics have been placing great stress on producibility. They are working out a method of evaluating producibility factors of aircraft designs submitted in competitive bidding.

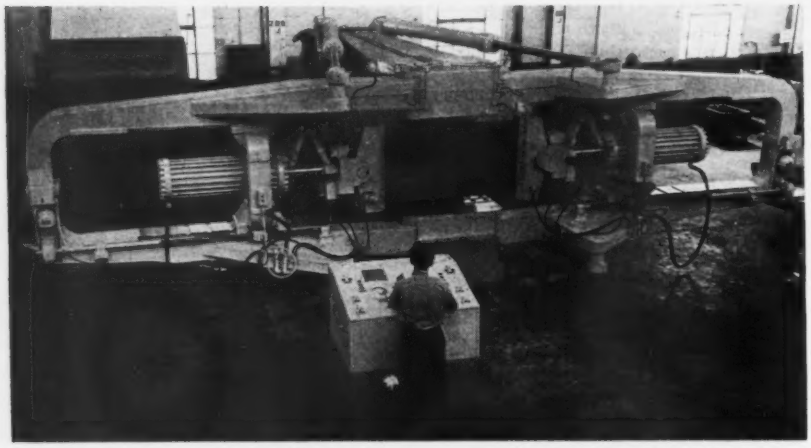
This evaluation will take into account not only performance of the proposed airplane but simplicity of design and equipment, number and diversity of parts, ease of fabrication and assembly, use of noncritical materials and processes, use of standard components and accessories, familiarity of the plant with the design type, expansibility of both the design and the organization, financial status of the company, manufacturing know-how, ease of maintenance, and so on. Each of these items will be graded. The company scoring the highest along with top performance presumably will get the business.

Shortages of plant facilities which created delays during the last war are not likely to mean trouble for the current peacetime expansion. West Coast aircraft manufacturers currently are operating 28,175,000 square feet of covered plant area. At peak operation in event of a war, the President's Air Policy Commission estimates, such a factory area would be capable

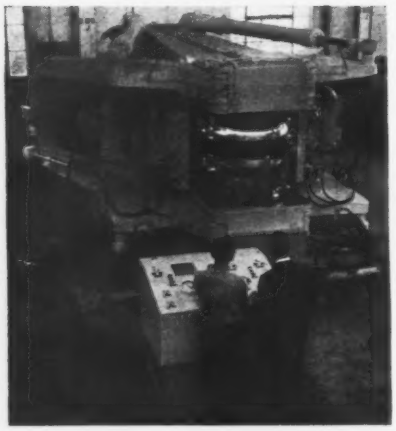
• Northrop's new X-4, good example of research plane developed to test aerodynamic performance through the sonic speed range. Note knife-like thinness of sweptback wing.



• America's most advanced jet engine, designed in the West, is the 8,000 h.p. Lockheed turbo jet, created by Nathan C. Price while head of Lockheed's power plant section.



• Designed and built to meet North American's specifications, this Hufford stretcher pulls aluminum sheet over a die, providing a formed part with more uniform strength.



• Stretcher jaws, 50 tons capacity each, are closed. Spring back reduced to minimum.

of turning out 252,000,000 airframe pounds a year.

Since the peak rate in the current peacetime program is approximately 110,000,000 pounds, to be reached in about 18 months, it can be seen that factory space of West Coast companies is more than adequate to handle even the entire national program.

Industries supplying aircraft makers with parts and accessories, however, are heavily engaged in civilian production. Air Force Secretary Stuart Symington has blamed some postwar production delays on unwillingness of vendors, suppliers and parts manufacturers to accept low-volume military orders. This is partly because of greater profits in commercial business, the secretary has said, but it is also because previously the military has not been authorized to make long term commitments.

Inertia Involved

Accompanying the shortage of plant facilities in 1940 and 1941 was a critical need of machine tools. Since the war the Air Force and Navy have acquired some 65,000 general and special purpose machine tools and items of related production equipment. The services also have sent out "hold for release" orders for new machine tools to go into effect without delay if a war emergency arises.

It is of great importance that everyone realize that the production of any complicated mechanism such as a modern airplane cannot be turned on and off at will. The inertia involved is measured in terms of years. It takes months of lead time to order and manufacture the thousands of important parts and materials needed to build airplanes. Here are some examples of lead time:

Processed material such as aluminum sheet and extrusions, six months from mine to airplane plant.

Special forgings, nine months to a year.

Hydraulic landing gear struts, 10 to 12 months.

Radio equipment, seven to eight months.

Engines, types now in production, eight to nine months; new types starting production, 18 months.

Ball bearings, six months.

Blower units, five to six months.

Brake assemblies, five to six months.

These are only a few of the items involved. Practically every mechanical trade in our nation's industry has a part in producing the materials and items of equipment in the modern airplane. It still takes from two to eight months of flow time to build the airplanes after everything is available. The production planning function of getting the bits and pieces in the right place at the right time and properly processed is a task of huge proportions.

The More, the Cheaper

Continuity of orders and aircraft production even in moderate quantity enables manufacturers to procure materials and parts in quantity at considerable savings. It enables them to preserve balanced working forces without costly layoffs, rehirings, retraining programs, and idle facilities. High costs of engineering and tooling can be absorbed by a large number of units.

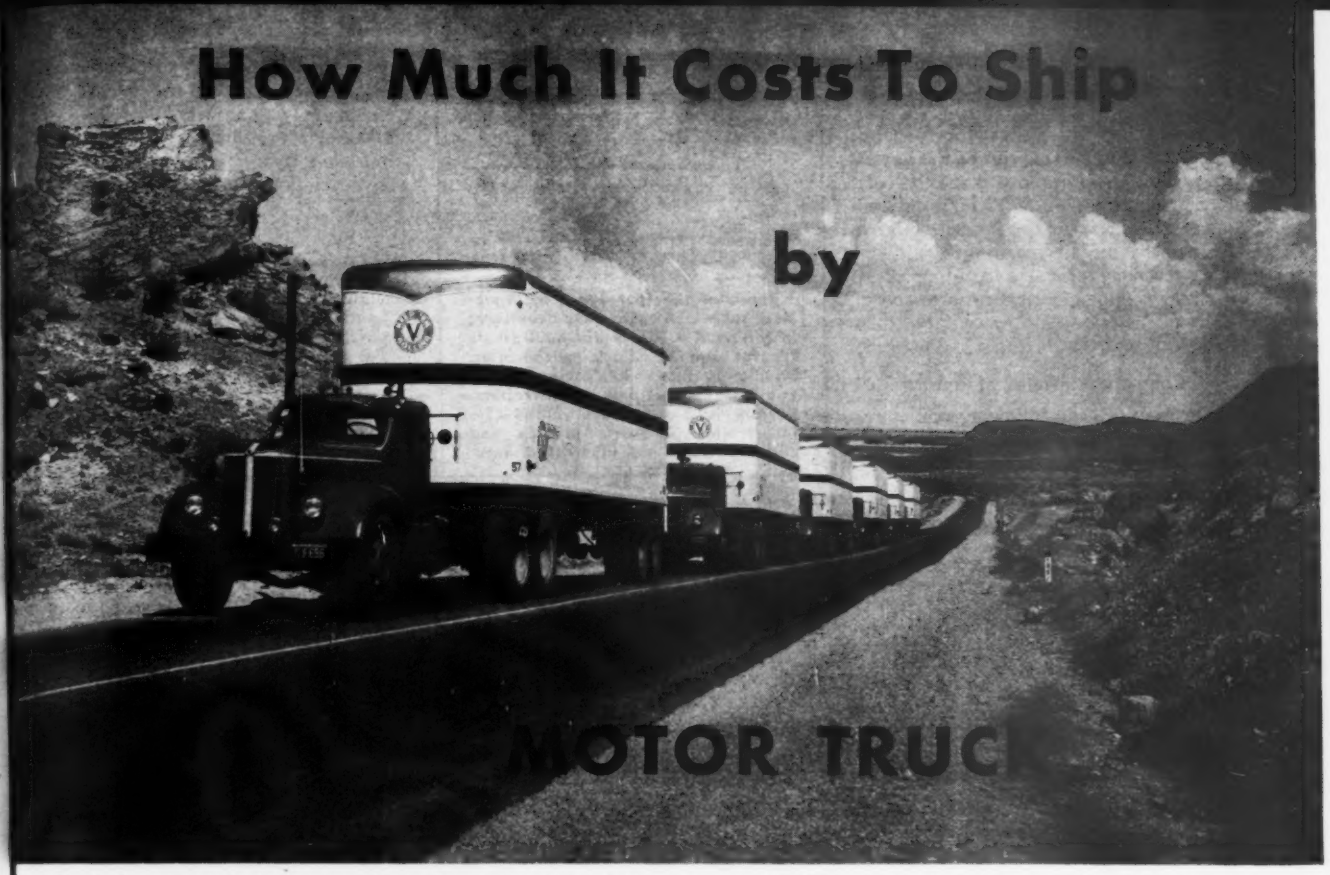
When only three experimental fighter planes are ordered, for example, engineering accounts for two-thirds of the cost. When 500 planes are ordered, engineering costs are down to five per cent of the total cost. For a typical airplane the tooling cost for an order of 10 airplanes would average about $100,000 for each unit. If 1,000 planes are ordered, the unit tooling cost drops to $9,000.

Taxpayers Benefit

Our aircraft industry for many years has been pointing out advantages of steady, not large, procurement of military planes. If the United States orders a new fighter, the first ship might cost $3,000,000. If 500 are ordered, the unit cost drops to $100,000.

Such figures as these show the need for long-term planning and contract authorization to avoid gaps in production and make effective use of facilities, tools and manpower. The President's Air Policy Commission has observed that "savings on the uninterrupted production of airplanes over a five-year period, as compared to five annual procurements with the same total number of planes, could run as high as 20 to 25 per cent."

How Much It Costs To Ship by MOTOR TRUC



• Fleet of seven 3-axle tractor and 2-axle Fruehauf refrigerated van type semi-trailers on the Los Angeles - southern Nevada run.

THE most thorough and complete study of the cost of transporting property by motor vehicle ever made was completed in recent weeks by the Public Utilities Commission of California. It is expected to become a national master pattern, not only for regulatory bodies in other states, but also the Interstate Commerce Commission itself.

While it covers for-hire carriers only, much of the information is of great value to manufacturers who do their own hauling and other manufacturers who employ for-hire truckers. Some 75 pages of text, tables and charts were required to set forth in great detail all the information gained.

Direct Personal Investigation

It gives some idea of whether for-hire truck lines are earning a profit and goes exhaustively into costs, not only of the use of equipment but also of moving shipments of different weights in both pickup and delivery and line-haul service. Platform costs are analyzed, and finally it provides a yardstick of comparison between rail and truck operating costs.

The survey was not evolved by the "questionnaire to end all questionnaires" method. Instead, it was done by choosing a list of 111 carriers, personally checking each carrier's accounting records from Oct. 1, 1946, to Dec. 31, 1947, and interrogating each owner or general manager on eight different features of his business, such as manner of service, type and use factor of equipment and his operating and indirect costs.

In addition to assembling all this information on a special four-page form and map, special time studies were made of less than truck load shipments, to show terminal platform handling costs, and trip reports were gathered on pick-up and delivery and line-haul operations. Field representatives from the Commission's staff rode on pick-up and delivery units as observers.

Wherever materials are to be handled, there some business organization is either making or losing money, perhaps an amount large enough to mean the difference between profit or loss on the entire operations of the company. For that reason, "Western Industry" provides a continuous editorial service to its readers on materials handling developments and problems. The accompanying article is another of "Western Industry's" regular features on handling of materials.

C. H. Jacobson and Grant L. Malquist, senior transportation engineers of the Commission, carried on the work, reporting to Warren K. Brown, director of transportation. They were assisted by T. A. Hopkins, supervising transportation engineer, and various other engineers of the department.

The report is being submitted as evidence in an investigation by the Public Utilities Commission to determine minimum rates applicable to the transportation of property by for-hire carriers operating under prevailing conditions.

Total operating revenue for 1947 for the carriers included in the summaries (operating 4,795 power units as of Dec. 31, 1947) amounted to $72,759,064 and is 29.5 per cent of the total operating revenue of some 15,000 highway carriers in California for the same period.

Margin of Profit

Detailed studies were conducted into relationship between "operating ratio" (relationship of operating expense, exclusive of income taxes, to operating revenue expressed as a percentage of the latter) and rate of return on investment.

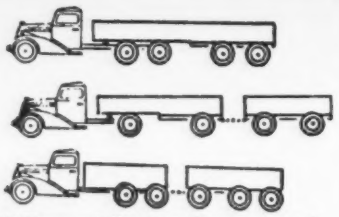
It was found that the rate of turnover of capital stated as a relationship of annual revenue to average investment varies from 1.13 for less than 100 pounds hauled 30

miles to 3.99 for 30,000 to 36,000 pounds hauled 75 miles.

Combined operating ratio of 74 "permitted" (contract) carriers for 1947 was 95.22 per cent, although 12 of the carriers showed an operating loss, while the combined operating ratio of 37 highway common carriers was 96.73 per cent, with five of them having an operating loss. Operating revenues for a selected group of 10 highway common carriers for a period of 10 years increased 302 per cent, but their operating expenses increased 310 per cent.

Comparative Rates of Return

For example, the following figures for the weight group of 1,000 to 2,000 lbs. of shipments are illustrative.



• Three of the four types of equipment for which costs were developed in this study. Top is line-haul 3-axle tractor and 35' 2-axle semi-trailer. Middle is line-haul 2-axle tractor and two single-axle semi-trailers. Bottom is 3-axle truck and 3-axle full trailer. Two-axle pick-up and delivery truck not illustrated here.

Ref.	Item	30-Mile Line Haul Operating Ratio 90%	93%	95%	500-Mile Line Haul Operating Ratio 90%	93%	95%
1.	Direct expense:						
2.	Pickup and delivery	$12,134	$12,134	$12,134	$11,340	$11,340	$11,340
3.	Terminal platform	45,429	45,429	45,429	7,739	7,739	7,739
4.	Line haul	31,003	31,003	31,003	23,301	23,301	23,301
5.	Total	88,566	88,566	88,566	42,380	42,380	42,380
6.	Gross revenue	124,457	120,250	117,600	58,565	56,585	55,340
7.	Available for return	7,454	5,041	3,522	3,508	2,372	1,657
8.	Average investment:						
9.	Pickup and delivery	26,076	26,076	26,076	6,498	6,498	6,498
10.	Terminal platform	2,584	2,584	2,584	645	645	645
11.	Line haul	13,383	13,383	13,383	14,414	14,414	14,414
12.	Total	42,043	42,043	42,043	21,557	21,557	21,557
13.	Rate of return	17.7%	12.0%	8.4%	16.3%	11.0%	7.7%

In studying operating costs for vehicle units operated in pickup and delivery service, and applying an over-all use factor of 2,200 hours per annum for tractors and semitrailers, total hourly and per mile costs were developed as follows:

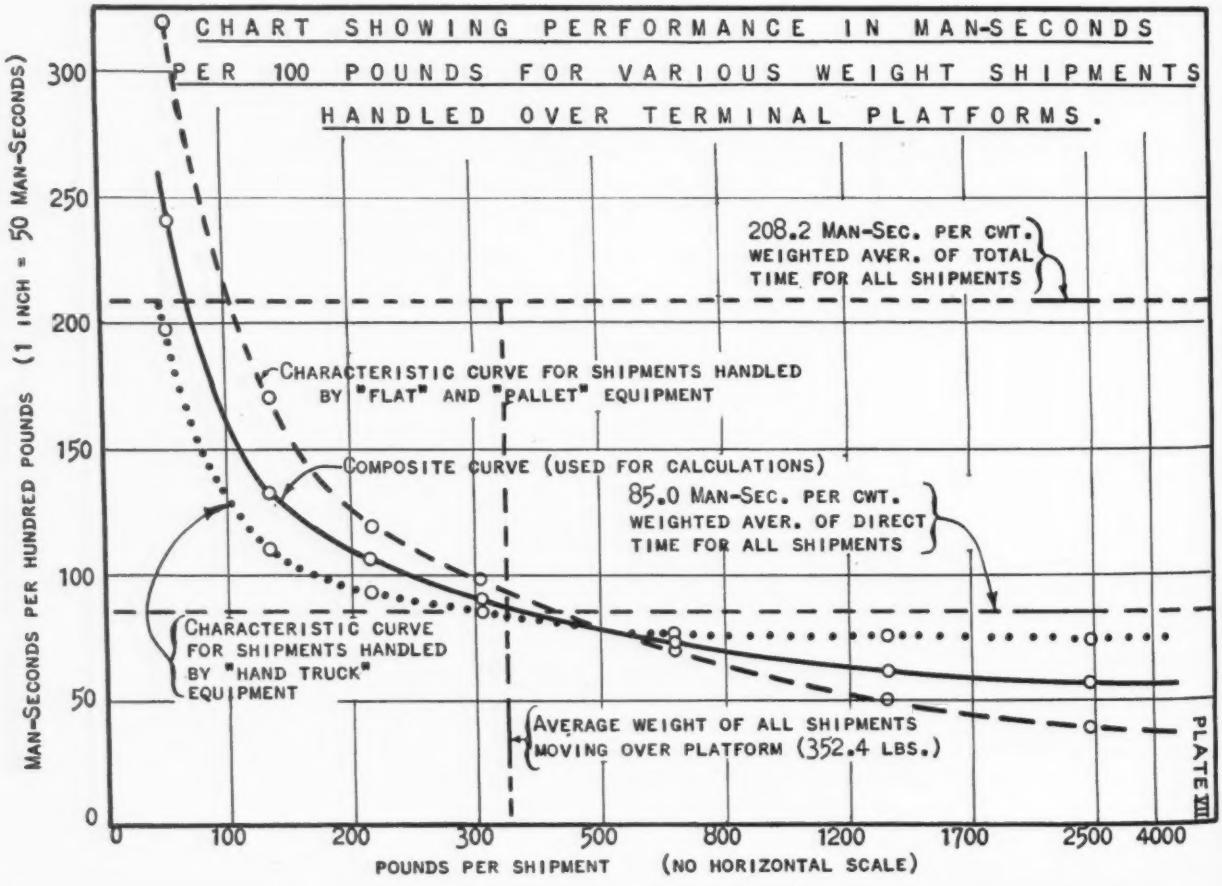
Type of Vehicle	Weight Group: Less than 20,000 pounds Hourly Cost	20,000 pounds and over Hourly Cost
Tractor alone	$0.3545	$0.3545
Semitrailer	0.1668	
2 semitrailers and converter gear		0.2859
Total fixed expense per hour	$0.5213	$0.8072
	Running cost per mile	
Tractor alone	$0.0964	$0.0964
Semitrailer	0.0127	
2 semitrailers and converter gear		0.0336
Total running cost per mile	$0.1091	$0.1300

Minimum Shipping Costs

Minimum costs for shipments up to 100 pounds were found to be as follows:

Weight groups	Cost
Under 25 lbs	$0.1920
25-50 lbs	0.2210
50-75 lbs	0.2421
75-100 lbs	0.2809
Less than 100 lbs	0.2380

Cost per 100 pounds for pickup and delivery with a two-axle truck, 6,000 to 10,000 pounds carrying capacity, operat-



ing in multiple and single-stop service, totaled up as follows:

Weight groups	Total cost per 100 lbs.
100-500 lbs.	$0.5642
500-1,000 lbs.	0.3106
1,000-2,000 lbs.	0.1445
100-2,000 lbs.	0.2183
500-2,000 lbs.	0.1729
2,000-4,000 lbs.	0.0944
4,000-10,000 lbs.	0.0604

Cost Per 100 Pounds

Direct cost per 100 pounds, using line-haul equipment of tractor with two semi-trailers and converter dolly, five or more axles, approximate carrying capacity 18 to 24 tons, in multiple stop service, was shown in the report as follows:

Weight groups	Direct Cost per 100 lbs.
Less than 2,000 lbs.	$0.1274
2,000-4,000 lbs.	0.0960
4,000-10,000 lbs.	0.0800
10,000-20,000 lbs.	0.0640
20,000-30,000 lbs.	0.0415
30,000-36,000 lbs.	0.0416
36,000 lbs. and over	0.0434

Single Stop Service

The same unit in single stop service developed the following costs:

Weight groups	Cost per 100 lbs.
Less than 2,000 lbs.	$0.1489
2,000-4,000 lbs.	0.1064
4,000-10,000 lbs.	0.0791
10,000-20,000 lbs.	0.0447
20,000-30,000 lbs.	0.0372
30,000-36,000 lbs.	0.0333
36,000 lbs. and over	0.0334

Platform Performance

Platform performance was studied on 18 platforms in the San Francisco and Los Angeles areas. By using a performance of 1,725 pounds per man hour for the purpose of this study, and the statewide labor cost of $1.5647 wages paid per man hour (on a basis of platform man hours determined by the study to be 70 per cent for platform men, 21 per cent for local truck drivers and 9 per cent for local tractor drivers), expanded for vacation pay, payroll taxes and insurance, a total platform labor cost of $1.7088 per man hour resulted, and total platform labor cost of $0.0907 per 100 pounds.

Terminal Costs High

Time study also revealed a weighted average of total time (payroll hours) for all shipments over the platform of 208.2 man-seconds per 100 pounds, as compared with 85.0 man-seconds per 100 pounds of direct time. Thus 59.2 per cent of the total time was spent in waiting in line, sweeping platforms and miscellaneous duties.

Production Possibilities

The survey revealed what had been generally suspected, that short-haul trucking rates are too low in proportion to long haul, on account of the high platform costs. It is expected that studies of railroad platform costs will indicate a similar pattern of high terminal costs in relation to actual transportation expense.

DIRECT PLATFORM COSTS

Total direct platform costs per 100 pounds came out as follows:

Weight groups	Cost per 100 lbs.	Weight groups	Cost per 100 lbs.
Less than 100 lbs.	$0.2955	Less than 2,000 lbs.	0.1065
100-500 lbs.	0.1191	2,000-4,000 lbs.	0.0449
Less than 500 lbs.	0.1443	4,000-10,000 lbs.	0.0266
500-1,000 lbs.	0.0746	10,000-20,000 lbs.	0.0137
1,000-2,000 lbs.	0.0601	20,000 lbs. and over	0.0040
500-2,000 lbs.	0.0690		

RUNNING COSTS PER MILE

Running costs per mile for line-haul equipment are summarized below as follows:

	Tractor	Semitrailer	Semitrailer & converter gear	Total Unit
Tractor with one semitrailer, 5 or more axles, 18 to 20 tons payload capacity	$0.0872	$0.0213		$0.1085
Tractor with 2 semitrailers and converter dolly, 5 or more axles, 18 to 24 tons capacity	0.0774	0.0127	$0.0209	0.1110
Truck and trailer (open body, flat or stake), 5 or more axles, 18 to 24 tons capacity	0.0882	0.0258		0.1140

COMPARISON WITH RAIL COSTS

Line-haul costs per 100 pounds are of great interest, because of the keen competition between trucks and railroads. Following is a summary of the information brought to light, for various distances, computed on a "constructive mileage" basis (taking into account grades, traffic, etc.):

	30 miles	75 miles	150 miles	350 miles	500 miles
3-axle tractor, and 2-axle semi, 35-ft. box, 1,800 cu. ft. content, maximum potential capacity 39,500 lbs.					
Load factor, per cent	51	55	58	61	66
Total direct expense, per trip	$9.8066	$19.6463	$33.9322	$71.5823	$100.0664
Direct cost per 100 lbs.	0.0488	0.0905	0.1482	0.2970	0.3834
2-axle tractor, 2 single-axle semis and converter gears. Two 21-ft. boxes, 2,200 cu. ft. capacity, maximum potential capacity 43,000 lbs.					
Load factor, per cent	46	50	52	56	60
Total direct expense, per trip	10.0564	20.1736	34.3661	72.2967	100.8349
Direct cost per 100 lbs.	0.0508	0.0938	0.1534	0.3000	0.3908
3-axle truck, 3-axle full trailer, maximum potential capacity 42,000 lbs.					
Load factor, per cent	41	49	53	56	60
Total direct expense, per trip	10.4676	21.1822	36.0588	74.4103	104.1295
Direct cost per 100 lbs.	0.0609	0.1028	0.1617	0.3166	0.4132

THE VITAL COMPETITIVE SPOT

An even more direct opportunity for comparison with rail costs is obtainable from cost figures on the haul from Los Angeles to the San Francisco Bay area and Sacramento. For the three types of equipment listed above, the figures are:

Los Angeles Metropolitan Area to:	San Francisco-Oakland	Sacramento
Tractor — semi, 18 to 20 tons		
Load factor, per cent	76	70
Total direct expense per trip	$89.9683	$83.4589
Direct cost per 100 lbs.	0.2999	0.3018
Tractor with 2 semitrailers and converter dolly, two 21-ft. boxes 2,200 cu. ft. content, maximum potential capacity 43,000 lbs.		
Load factor, per cent	72	66
Total direct expense, per trip	$91.6439	$85.0110
Direct cost per 100 lbs.	0.2956	0.2993

WHAT THE REPAIR BILLS LOOK LIKE

Data collected on 33 trucks over the period 1940-1947, inclusive, employed in pickup and delivery service over 3,032,833 miles, shows repair cost from the time the vehicles were first put into service. The data obtained was adjusted to reflect the increase in cost of labor and materials occurring during the period since 1940. From this information a cost of $0.0280 per mils will be used by the Public Utilities Commission.

Year of Oper.	Accumulated Miles	Yearly Miles	Accumulated Adjusted Cost	Yearly Adjusted Cost	Cost per Mile Accumul.	Cost per Mile Yearly
1st	241,537	241,537	$2,131	$2,131	$0.0088	$0.0088
2nd	792,681	551,144	7,274	5,143	.0092	.0093
3rd	1,227,045	434,364	14,806	7,532	.0121	.0173
4th	1,624,502	397,457	28,062	13,256	.0173	.0333
5th	2,007,571	383,069	43,246	15,184	.0215	.0396
6th	2,445,635	448,064	61,153	17,907	.0249	.0399
7th	2,912,438	456,803	78,976	17,823	.0271	.0390
8th	3,032,834	120,396	84,569	5,593	.0278	.0464

LABOR
and the
INDUSTRIAL WEST

Management and Labor Join in "Out of the Fog" Radiocast

"OUT OF THE FOG" is the title of a public benefit radio program sponsored by station KJR in Seattle featuring leaders of management and labor in frank discussions aimed at dispelling the fog of misunderstanding which shrouds the American system of business.

Twelve weekly broadcasts ran through the months of September, October and November on time donated by KJR, and were repeated by transcription over six radio stations throughout the state of Washington. The discussions were aimed at the average working man, who was invited to enter a radio contest for which $500 in prize money was offered for the best answer to "I believe the American system of business is the best for me because . . ."

Each time the announcer began by pointing out that "siren voices" were preaching discord and disruption. Then he put on an imitation of the "chairman of the American Truth Committee," a character who accused union leaders of such offenses as being "trained seals . . . bought out with secret capitalistic dollars" and "exposing" the program as a device to pull the wool over the eyes of unwary people. After that introduction, the management and labor representatives put on their talks, discussing the responsibilities of both sides and the need for cooperation and mutual understanding.

Programs were prepared by Roderick Olzendam and Associates of Tacoma. Following is a list of titles and guests for the series:

1. **Your Stake in the U. S. A.**
   Edw. L. Blaine, vice-pres., Peoples National Bank, Seattle.
   J. Archie Morton, general manager, KJR.
   E. M. Weston, president, Washington State Federation of Labor.
2. **What Stake Does a Wage Earner Have in the American System of Business?**
   E. W. Daniels, president, Harbor Plywood Corp.
   Vernie Reed, vice-president, Washington State Federation of Labor, 5th District; business representative for the International Hod Carriers, Building and Common Laborers Union of America, Local 252.
3. **How Can a Wage Earner Protect and Improve His Stake in the American System?**
   Charles Mentrin, business representative of Amalgamated Meat Cutters and Butcher Workmen of North America, AFL, Local 186.
   Frank West, Preservative Paint Co., Seattle.
4. **Who is Management?**
   Thomas J. Bannan, president, Western Gear, Seattle.
   Roy Atkinson, regional director, CIO, Seattle.
5. **What Is Management's Job in the American System of Business?**
   Don Roberts, secretary, Newspaper & Magazine Local 763, International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America, Seattle.
   Lawrence E. Karrer, executive vice-president, Puget Sound Power & Light Co., Seattle.
6. **What Is Management's Responsibility in Human Relations?**
   Malcolm E. McLaren, secretary, Seattle Metal Trades Council, AFL, No. 2800.
   W. Walter Williams, president, Continental, Inc., Seattle.
   R. A. Sutermeister, counselor in industrial relations, Tacoma.
7. **What Do You Mean—Capital?**
   James A. Duncan, Grand Lodge representative, International Association of Machinists, Seattle.
   William G. Reed, chairman of the board, Simpson Logging Co., Seattle.
8. **What Do You Mean—Profits?**
   Jack McDonald, business representative, International Union of Operating Engineers, Local No. 302, AFL, Seattle.
   Reno Odlin, president, Puget Sound National Bank, Tacoma.
9. **Where Do Wages Come From?**
   Wesley Bubb, secretary, Seattle Newspaper Guild, CIO, Seattle.
10. **Are Customers the Real Bosses of Capital, Management and Labor?**
    John Locke, vice-president, Fisher Flouring Mills, Seattle.
    L. H. Paque, business manager, AFL Grain Millers, Seattle.
11. **What Is the Place of Government in the American System?**
    Elmer Kennedy, legislative representative, Washington State Federation of Labor, Olympia.

• Roderick Olzendam, moderator of the series; J. H. Kitlar, president, F. S. Harmon Mfg. Co., Tacoma; Elmer Kennedy, legislative rep., Washington Federation of Labor, Olympia.

12. Education's Place in the American System.
Pearl A. Wanamaker, State Superintendent of Public Instruction, Olympia.
Stephen F. Bayne, Jr., Bishop of the Diocese of Olympia.
Ralph Chaplin, author, Tacoma.
Elmer Miller, international representative, American Federation of Teachers, Seattle.

13. Prize Winners.

Insurance Ruling Troublesome Problem

A recent decision of the California Appeals Board that neither a voluntary disability insurance carrier nor the State Disability Insurance Fund has the right to decline a claim because the disability is occupational in origin, constitutes an important practical change in the manner in which benefits may be paid under the provision of the 1946 Compulsory Disability Insurance Act.

The practical effect of the decision is to give claimants an uncontrollable right to determine whether they will file their claim and insist upon payment either from the Disability Insurance Fund or from the Workmen's Compensation source. If the worker insists on filing for disability insurance benefits, the only recourse of the State Disability Fund or a voluntary disability carrier is to pay the claim and then undertake to file a workmen's compensation claim in the name of, and on behalf of, the worker and to prosecute this matter before the Industrial Accident Commission in order to recoup.

Under many sets of circumstances it will be possible for the worker to make a double recovery for the same period of time, that is, to receive both disability insurance benefits and later workmen's compensation benefits.

H. Harold Leavey, vice-president and general counsel of California - Western States Life Insurance Company, a large writer of voluntary disability insurance coverage, states that it is impossible to estimate the cost of the additional outlay which will result from the decision. He points out that it is estimated that in 1948 there will be something more than $25,000,000 paid out for short term temporary disability under the workmen's compensation statute in the state and that if any substantial number of claimants insisted on making their short term disability claims under the U.C.D. program the additional outlay could run to many millions per year. This decision is viewed with concern because practically every one associated with the program has believed that Section 207b of the Act gave claims men administering the U.C.D. program the clear right to deny a claim when the facts indicated that the disability was occupational in origin.

The voluntary insurance carrier involved is considering litigating the problem. It has been suggested that curative legislation may be submitted to the 1949 session of the legislature.

GENERAL WAGE CHANGES IN PACIFIC-ROCKY MOUNTAIN REGION
October 16 to November 15, 1948

Compiled from various sources by the Bureau of Labor Statistics, Wage Analysis Branch

Manufacturing	*Location*	*Date*	*Amount of increase*	*No. of workers*	*Other economic benefits*
Pacific States Steel:	Niles and Pittsburg	10/48	13c	700	
Sacramento Jobbing Foundries	Sacramento	11/1/48	6c (approx. 4%)	90	Improv'd vacations & holidays given.
Conveyor Corp.	Los Angeles	Retro. 4/1/48	9% (4½c to 7c)	150	Two classes given more: labor 11½c; blacksmiths 10c over the 9%.
Cutting Eng. Co.	Los Angeles	10/48	11½c	.....	
Pac. Iron & Steel	Los Angeles	10/48	13½c	300	
Eljer Co. of Calif.	Los Angeles	10/48	13c	300	
Armco	Los Angeles	10/48	12c	.....	
Morris P. Kirk & Sons	Los Angeles	11/2	20c an hr. bonus	200	
International Harvester & Pioneer Truck Co.	San Diego	Retro. 8/23	10c	20	
National Metals	Los Angeles	Retro. 9/21	10-20c	260	
Stone, Clay & Glass Products:					
Los Angeles Brick	Los Angeles & El Segundo	11/5	5c	305	
Lumber:					
Essex Lumber Co.	No. Sacramento	Retro. 4/1/48	12½c	105	
Lumber Companies	San Bernardino & Riverside	10/48	11c	240	6 paid holidays and 40-hr. week.
Furniture:					
Superior Sleepright Corp.	Los Angeles	11/4	7½c	180	
General Felt Products of Calif.	Azusa	11/5	av. 9½c	77	
Standard Felt Co.	Alhambra	11/2	5c to men 6c women	130	3 added paid holidays; improved vacations; insurance coverage.
Paper & Paper Products:					
Several Box Board Mills & Paper Box Plants	Los Angeles	10/15	9% (15c min.)	.....	additional paid holidays.
Chemicals:					
Purex Corp., Ltd.	South Gate	Retro. 10/1	15c	120	
Shell Chemical Co.	Pittsburg Martinez Ventura Coalinga & Bakersfield	Retro. 7/3	12½c	3,200	
Five Major Refining Co.'s					
Standard, Richfield, Tidewater, Texas, Shell	Calif. State	Retro. 7/3	12½c	11,000	
Food Processing:					
Kern Co. Milk Dist.	Bakersfield	10/29	9½c-11c	approx. 400	
Food Employers Council	Los Angeles	10/48	15c	600	
Operating Companies & Fishermen's Locals:					
CIO and AFL	San Pedro	11/2	.60 per ton sardines	2,000	
Swift & Co. Plants	Los Angeles	10/22	4c		
Wholesale Trade:					
18 Plants of Scrap Metal Trade	Los Angeles	Retro. 9/21	10c	500	6 paid holidays.
Mining:					
Natomas Company	Natoma	Retro. 3/1/48	7½c	162	
Mountain Copper Co.	Martinez	11/15	12½c	50	
Construction:					
Bay County Tile Construction Assoc.	Oakland	10/15	30c for journeymen & % increase to apprent's	439	

(Continued on page 44)

GENERAL WAGE CHANGES IN PACIFIC - ROCKY MOUNTAIN REGION

(Continued from page 43)

Construction: Manufacturing	Location	Date	Amount of increase	No. of workers	Other economic benefits
San Francisco Bay Counties Contractors: Tile Layers	Oakland	10/14	*18¼c	335	*11¼c & 7c added as Union withdrew demand for paid vacation.
Contracted Plasterers & Lathers Assoc. of Southern California	Los Angeles	10/14	25c	1,250	
Transportation & Utilities:					
Standard Oil Co. of Calif. (Sailors on Tankers)	West Coast	.....	8.9%	600	Overtime benefits
Pacific-American Ship Owners Assoc. Marine Engineers	San Francisco	10/30	5.3% ($18 to $25 per month)	7,000	
Pacific-American Ship Owners Assoc. Masters, Pilots, Mates	San Francisco	11/3	5.3%		
Pacific Elec. Railway Co.	Los Angeles	10/16	10c	2,200	
American Tel. & Tel. Co. Long Lines Div.	Nationwide	about 10/15	9.3% average	25,000	
Welfare:					
18 Major Hospitals in Bay Area and San Francisco	East Bay Area	8/16 East Bay; 9/1 S. F.	$15.00 per month	2,000	add. 3 days sick leave and min. mo. rate $215.00

Unions Feel They Are Too Often Overlooked

"ORGANIZED labor looks to management to carry its share of responsibility for setting up and maintaining sound and permanent industrial relations," declared Arnold Campo, International Representative, United Steelworkers of America, CIO, who outlined his Union's suggested program for employers before the San Francisco Chapter, Society for the Advancement of Management, at its December meeting.

"Organized labor is now a permanent part of American industry," Mr. Campo stated, "and it should, in our opinion, be accepted on that basis by management. Labor should be worked with by management and not passed by when the top side is making policy which may affect employment in any way. Not to do this is to avoid a major responsibility of management to its employees, and in addition damage employee faith in the fairness of the company.

Labor Has Problems

"Organized labor frequently comes to the employer's plant with great difficulty, sometimes following prolonged strikes or lockouts. Industrial warfare usually leaves bad feeling on both sides to be worked over into peaceful cooperation. Once the Union is well established, we believe the parties have a mutual obligation to work together, within the area of their mutual interests, which certainly should include cooperation by labor with management for productive efficiency.

"Many otherwise intelligent and capable managements do not really accept, in our opinion, the idea that organized labor is permanent, as may be judged by these examples:

"(a) At a recent dedication of a new mill, reference was made only to the cost of the new project. No mention was made of the men involved in the construction, the installation or operation of the equipment, nor of their unions. Yet the men involved were proud of their work. It would have cost nothing to tell what they had done. The men would have developed better feeling toward the company as a result. That good feeling by the crew would be helpful to both the company and to the Union, let us say, in future negotiations.

Management Has Them, Too

"(b) The company's publicity department inserts a full page advertisement in a prominent publication extolling its good relations with its workers, but with no mention of the Union to which the employees belong. Better, we think for the company that this advertisement not be run, because the men in the plant know about the absence of reference to their union. Many of them resent what they consider a deliberate act by the company. It might have been just an oversight. We don't know.

"(c) Another large company announced a benefit for all employees and permitted the Union at the plant to learn about it by reading a story in the newspapers. Again, this may have been an oversight, but it was at the least unwise. The lack of an invitation, before the published notice, to the Union, which acts as the collective bargaining agency for the plant's employees, raised a serious question in the minds of the officials of the local and many of the employees. These have the feeling the company is not taking the Union seriously.

"American management usually has good manners and is familiar with the courtesies of business and social intercourse between individuals and groups. However, many corporations, even when closely related by an agreement with a Union representing their own employees, fail to recognize that the Union is a permanent part —and a distinctly human one—of their business."

What Intelligent Work Will Do

San Francisco Employers Council, San Francisco, report for 1948:

	Number of agreements completed (many agreements are by groups here counted as one each)	*Number of companies covered by agreements*	*Strikes against council members where dealings handled by council*	*Grievances settled by council*
Jan.	3	9	2	13
Feb.	7	15	0	29
Mar.	12	79	1	11
Apr.	14	93	0	12
May	10	195	0	17
June	13	292	0	17
July	20	60	0	10
Aug.	9	9	3	3
Sept.	23	74	0	15
Oct.	15	39	0	14
Nov.	7	12	0	8
Dec.	8	15	0	9
12 mo. totals	141	1,003	6	158

As of December 1, 1948, the Council had pending, or in process, 35 negotiations, involving 305 firms. Of these 21 were industry negotiations, involving 291 firms.

Union Officers Discharged For Abusive Language

Nonunion employees, in substantial numbers, complained to their employer that six of their fellow employees, all of whom were union officers, had on several occasions, abused them by calling them insulting names.

The employer discharged the six on the ground that such conduct on company property and during working hours created a serious disciplinary problem, as many of his employees had threatened to quit unless such abuse ceased.

The discharged men claimed they had been fired because of their union membership. The Board ruled the firings were not discriminatory because motivated by the misconduct of the employees. Two members of the Board dissented, holding the dismissals were anti-union in motive and the language used was not sufficient cause, since not uncommon among fellow employees in plants. (In re Sunland Biscuit Co., Inc., 78-NLRB No. 85, July 30, 1948.)

How Management Can Keep From Losing Its Authority

By ALEXANDER R. HERON
Vice-President in Charge of Industrial Relations
Crown-Zellerbach Corporation, San Francisco

A SENSE of responsibility is characteristic of civilized man. Dictators acknowledge no responsibility. But history proves that even dictators are subject to slow moving laws which enforce responsibility upon them. Over the long range, the basic law of the universe seems to be that power to affect people must be used for the common good, or the power will move to other hands.

During the last century power in the United States was largely in the hands of property owners and government. Property owners, capitalists and financiers have relatively little power today. Government has taken much of that power to itself, and has taken it with the consent of the governed.

Owners and capitalists have transferred most of their remaining power to a new class in our economy, a class or an institution called management. Organized labor has grown into tremendous power. Some of this was taken from owners, some from management, some from workers as individuals. Some of it was actually usurped from government. More of it was obtained through government, by the exercise of the power of organized labor over government.

Pay the Price of Power

We are now at the stage where the common good can be served only by the holders of power recognizing the responsibilities which go with the power. Some of our best minds have crusaded to force the recognition of responsibility by the managers of organized labor, and probably with more success than can yet be measured. Unfortunately there are two types of crusade to awaken management to the responsibilities which go with its power.

One of these crusades is doomed. It is the program which has emphasized a moral obligation, a debt of chivalry, a responsibility for paternalism.

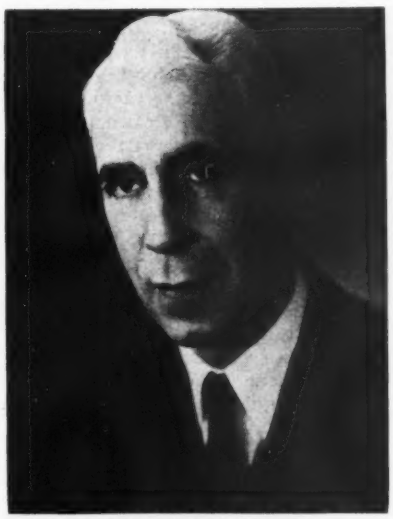
The other campaign emphasizes a hard practical equitable debt which management owes. It must pay the price for the power which has been given to it, by using that power obviously and consistently for the common good. The responsibility of management to employees is merely a part of the total responsibility of management, and cannot be separated from any of the other parts.

If management were still generally in the hands of the owners or capitalists, some phases of this responsibility would be clearly recognized. They were not all recognized two generations ago but they would have become just as definite as they are today if owners had continued to manage their own properties and enterprises. These obvious responsibilities would include the payment of fair wages, the provision of safe and healthy working conditions, the protection of the health of employees, and probably most of the present achievements in the direction of social security.

Recognize Responsibility

But management has some responsibilities which would probably never have been recognized by the owner-managers of the 19th century. Job security was less important in the days of the owner-managers, because those were the days of the self-employed owner worker. In times of depression, a relatively small part of the working force consisted of men who lost their places on payrolls. The number of self-employed was relatively several times greater than it is today.

The industrial revolution caused part of this change through its mechanical results, but most of it through its organizational results. A place on the payroll is the typical status of the American worker today. So far, he trusts the management system to organize the activities of industry and business, so that he, the worker, will have a job. Within the management institution, each management trusts the system as a whole to furnish jobs, so that each management will have customers.



ALEXANDER R. HERON
Student of human relations

So far government, the fundamental government represented by the voters themselves, has trusted the institution of management with this job. Fifteen years ago we were dangerously close to having this responsibility, and the power to meet it, taken away from management. The next time management fails will probably be the last time. Therefore management must face this all important responsibility, and must not fail to meet it. It is a direct responsibility to employees, but more important than that, it is a responsibility to society.

Passing for the moment the direct responsibilities that are obvious, such as fair wages and safe working conditions, management's responsibility to employees begins in its dealings with other groups. For any single management, the first responsibility to its employees is the responsibility to sell their services to the consuming public.

For Example

Management does not create any jobs directly. It creates all the jobs in America by selling the output of the workers whom it employs. The output which it sells is not always tangible. It always includes intangibles, priceless intangibles; the worker's skill, knowledge, imagination and integrity. This is not only its first responsibility, but it includes almost all its other responsibilities, in whole or in part.

We may trace this responsibility and its related obligations through a typical enterprise. Let us call it a men's clothing factory which now employs 1,000 people. It must sell suits of clothes this year, which will be purchased by you and me in the fall of 1949. It must have acceptable styles and designs, which calls for research. It must look ahead to the price level at the time of sale, and produce today at a cost which will meet that price level. This calls for research. It must provide a quality of fabric and workmanship, this year and every year, to preserve the reputation which will ensure its sales for the following year.

It must keep abreast of the world in the improvement of equipment, and sometimes pioneer in that progress. It must do the informational and personal job of selling, to keep its outlets open through distributors and retailers. It must build and maintain the public knowledge of its products,

through advertising which is truthful, attractive, and beamed at the actual market where its product can be sold.

To do all these things, it must ensure the necessary fixed and working capital for the enterprise. In the early stages, and occasionally even in the later stages, it must call upon owners for some of this capital. Sometimes it must borrow working capital, and be sure that it can pay back that working capital out of profits. If it is the management of a corporation, it must persuade the owners to leave a substantial part of their profits in the business from year to year.

New Attitudes in Order

Finally, it must do some things for and with its employees, which are not exactly the same as paying fair wages and providing good working conditions. It must provide an understanding of the basic fact that their jobs exist because management is selling their products, and selling the owners on the idea of providing the needed tools and equipment. It must protect their jobs, by training them to do those jobs efficiently, to get the necessary results of low cost and good quality.

Perhaps, above all, it has the responsibility for enlisting the interest of employees in protecting their own jobs; protecting them by helping management to sell their products. Management today is stumbling in this most important task. The attitudes of too many workers demonstrate that they do not understand the basic responsibility of management to them.

This is not strange, because it is only in recent years that management itself has recognized this responsibility. It is only recently that management itself has recognized that it is the only agency in the world which can furnish jobs to free men, by selling the products of their work in a free market. A dictatorship can furnish jobs for everyone but its employees are not free men. Their products are not sold in a free market. Their share in the product value is the barest subsistence, rather than a fair wage. From all reports, their productivity is incomparably lower than that of free workers.

There is growing dissatisfaction in the public mind today over the performance by management. This does not relate to any failure to provide jobs, in a period of unprecedented full employment. It does relate, among other things, to dissatisfaction over high prices. These high prices are in a small degree traceable to high profits in certain lines. They are obviously traceable in a greater degree to high wage rates. But even this cause is far overshadowed by the high unit cost of goods and services which results from low productivity.

Cooperation the Keynote

There is ample evidence that high productivity in modern industry and business can be attained only under something like our American management system, where workers are free men, working willingly and enthusiastically, so that the results of their work can be sold in a free market. Management today has a responsibility to win the cooperation of workers. They will give this cooperation if they understand the broad and basic function of management in selling the results of their efforts. They will not get this understanding by reading pamphlets or listening to speeches. They can get it by seeing the demonstration of the sense of this responsibility by management in the particular enterprise in which each worker is employed.

In Certain Cases, Overtime On Overtime Need Not Be Paid

UNDER the decisions of the United States Supreme Court and the rulings of the Wage-Hour Administration, according to a current San Francisco Employers Council bulletin, employers whose employees are covered by the Fair Labor Standards Act and *who pay premium rates for Saturday or Sunday* work, need not pay additional statutory overtime, if the Saturday or Sunday work normally occurs after the 40 hours have been previously worked in the work week.

". . . It is highly desirable for employers to establish workweeks commencing on Monday and ending the following Sunday. It is most important that the employees' earnings be computed on the *Monday through Sunday basis.* Notwithstanding the fact that the employers' agreement specifies the (regular straight time) workweek shall be 'Monday through Friday,' the employer is not protected unless his *payroll records* show with certainty that the employees are *actually* being paid for a Monday-through-Sunday workweek."

In order to make sure, the Bulletin continues, to avoid overtime compensation liability detailed records should be kept setting out the name of the employee, his hourly and weekly rate, the time of beginning and ending his 40-hour workweek, as from Monday at 12:01 a.m. to Sunday night at midnight, his classification and the overtime rate which applies to him, as provided in the contract. A record sheet showing straight time worked, overtime and total by days, brought forward at the week-end, with straight and overtime plus grand totals separated by days and by weeks, is recommended to the Council's employers.

"We are of the firm opinion that an employer's payroll week should coincide with the Monday-through-Friday workweek. In cases where the payroll week is cut off on Thursday, for example, so that paychecks may be issued on Friday, the employer may be found to have a workweek commencing on Friday and ending on Thursday. While in theory the workweek and payroll week may differ, it is advisable to have these weeks coincide. In cases where an employer cannot *clearly* show that any Saturday and Sunday work performed occurred *after* 40 *hours had been previously worked* he may be liable for additional statutory overtime. In the above example Saturday clearly falls in the period after 40 hours as had been previously worked.

"Where employees are paid semi-monthly the employer should nevertheless operate on a Monday-through-Sunday workweek. To be in a position to *clearly* show that the employees' earnings are computed on this basis, it is suggested that a supplementary *weekly* payroll record be maintained. . . . If this is done, an employer will be able to make the showing required by the Act, namely that the proper statutory overtime compensation was credited in *every week.* The employer should continue to maintain a separate record showing the total compensation paid in each semi-monthly pay period.

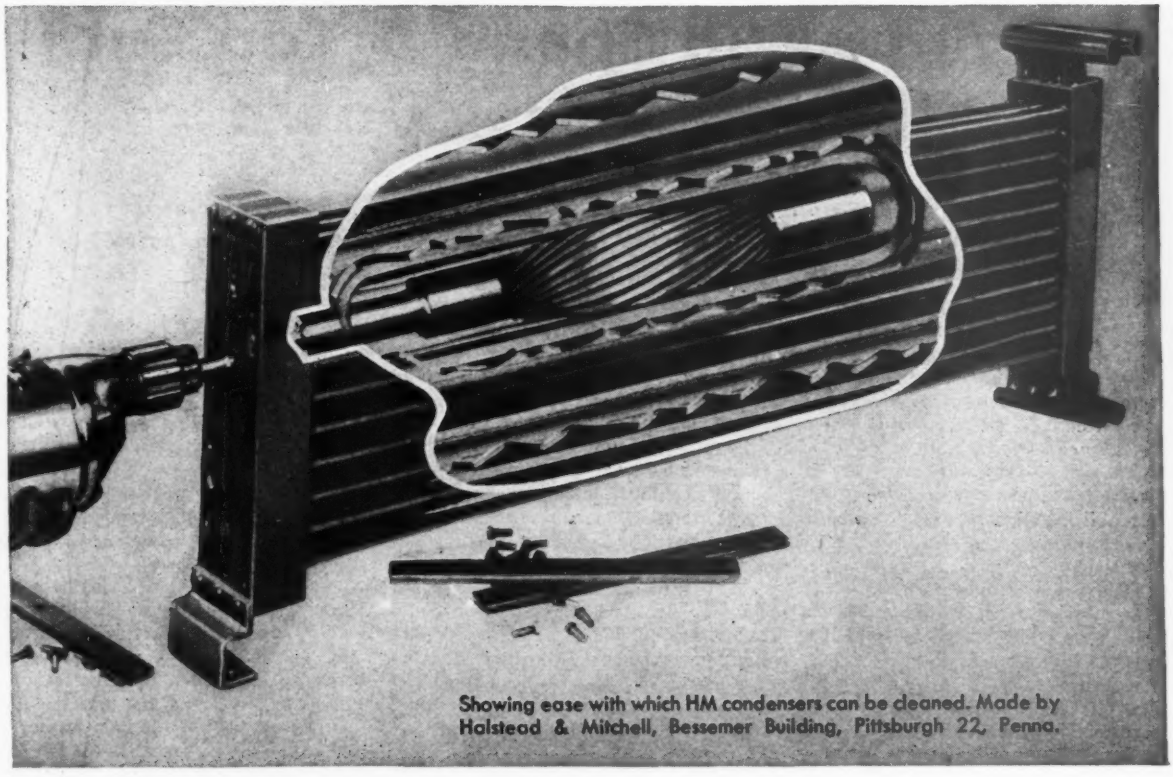
"It is extremely important that all employers carefully examine their payroll records and procedures to insure against the possibility of additional overtime compensation liability."

Fined For Failure To Pay Overtime

Artvogue of California, Inc., Santa Rosa, has been fined $500 by Federal Judge Michael J. Roche for violations of the Fair Labor Standards Act.

Attorneys for the firm, makers of sports shirts and neckties, entered a plea of guilty for the corporation to three counts of a criminal information charging failure to pay overtime at the rate of time and a half after 40 hours a week, falsification of payroll and time records, and shipping in interstate commerce goods produced after a violation of the wage and hour law.

REVERE COPPER TUBE PROTECTS CONDENSER QUALITY AND SERVICE



Showing ease with which HM condensers can be cleaned. Made by Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Penna.

This illustration shows one of the features of HM Condensers—cleanability. In the words of the manufacturer:

"These new HM units combine two qualities never before obtainable in tube-within-a-tube, water-cooled condensers—they're cleanable, and they achieve true counterflow heat-exchange relationship between the coolant and the refrigerant, enabling water requirements to be reduced without sacrificing condenser unit capacity."

AN IMPORTANT FACTOR not seen is the use of Revere seamless copper tube for both the inner and outer tubes of the condenser, and also rectangular brass rod for the header bar. This tube as well as the bar, must be practically perfect, in order to avoid the possibility of leakage during the expected normal life of the condenser, a life which is greatly extended due to the fact that the water tubes are accessible at both ends for insertion of the spiral cleaning tool. The manufacturer, Halstead & Mitchell, recently gave Revere a pleasing but not unusual compliment, saying that no Revere tubes had ever proved defective.

Revere offers condenser tubes not only in copper, but in Admiralty Metal, Muntz Metal, Revalon (Aluminum Brass), Herculoy, Brass, and three types of Cupro-Nickel. See Revere for condenser tubes.

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REGIONAL REVIEWS
TEHACHAPI TO TIJUANA

People Will Spend if You Cut Inflated Prices Down

Los Angeles Merchandising Event Proves Purchasing Power Is Intact; Southern California Entrenching as Home Base For Aircraft Industry

LOS ANGELES—An object lesson for manufacturers operating in today's rapidly shifting markets occurred recently when an eastern merchandising firm invaded Los Angeles with a super-colossal "premiere" that out-Hollywooded even the cinema capital.

Laying down a massive barrage of advance publicity, Ohrbachs, Inc., New York apparel firm, opened a store in this city's "Miracle Mile" on ritzy Wilshire Boulevard. Tone of the establishment was swank enough to match its surroundings, but its policies were oddly out of key with the upper-crust price standards prevailing in this district.

This fact created a near panic when the store opened in the new Prudential Square building, housing national headquarters for the insurance company, just moved here from the east. Publicity had pictured the Ohrbach firm as super-merchandisers whose production-line selling system cut costs and brought feminine apparel out of the stratosphere to within reach of the medium-range budget.

Lower Prices Make Them Buy

Nathan M. Ohrbach, board chairman, was quoted to the effect that "Our aim is to offer high fashions at low prices."

Innovations there were, to be sure, including an unusual self-service plan permitting housewives to choose, try on, and buy garments on the same cash-and-carry basis prevailing at local grocery "supermarkets." But when a movie actress cut a broad yellow ribbon to symbolize the store's opening, the torrent of eager shoppers which poured through the wide front doors quickly brought a hurry-up call for police. Nine minutes after the doors had opened, patrolmen forced them shut again to cut off an initial influx which had brought nearly 30,000 visitors jamming aisles and escalators, threatening to halt the show.

Ohrbach's advertising department shifted instantly into reverse gear. Soon radio stations were broadcasting spot announcements urging local shoppers not to hurry to the store, but to "Come visit us some other day." The retailing firm wired its New York office to fly a score of extra cashiers to help the local sales force.

Point of the episode is the fact that it was not Hollywood promotion which caused the unprecedented commotion in this metropolis — accustomed as it is to super-colossal spectacles at openings of every type of business from gas stations to hot dog stands. It was the price policy. Style-conscious housewives, long unable to make the family budget reach far enough, were almost fantastically eager to spend their money at prices which seemed to promise a fair value in return.

JUMBO PRESSURE COOKER

In this jumbo version of the housewife's pressure cooker, 43 feet high and 12½ feet in diameter, Firestone Tire and Rubber Company of California will process self-sealing rubber fuel cells. This is not only the largest pressure vessel of its type to be built in the West, but is also one of the world's largest rubber curing chambers. Of electric welded construction, it is built to withstand 100 pounds working pressure or full vacuum.

Large vessels built to withstand high pressures are customarily supplied by eastern manufacturers, but this was turned out by United Welding and Manufacturing Company of Los Angeles, a division of Harris Enterprises, Inc. The determining factor in this case was the 12 foot 6 inch quick opening safety door, sealing or unsealing completely in 35 seconds.

The event was all the more remarkable because it happened in a field of retailing which has been notoriously a soft spot in the business picture. Department store sales have been falling steadily behind last-year levels for a number of months. Apparel, shoe, and textile lines have led all the rest in the decline. Yet here was proof that the purchasing power was there all the time, waiting for prices to come down to earth.

As in many other areas, southern California's department store sales broke precedent in the fourth quarter by slumping from an all-time peak in August to the lowest point seen here in nearly two years. Peculiarly, it was the first time in history that such a Christmas decline was discernible on the Pacific Coast. In the past such movements have originated in the east and worked their way westward gradually.

Unemployment Creeps Up

A creeping anemia in retail sales in this area has been pointed out repeatedly in these columns during the past year, but at the year's end a primary cause for the malady became apparent. Unemployment rose sharply, despite the usual holiday hiring. Factory employment declined more than seasonally. Breaking an uptrend started last May, the drop was felt in nearly every industrial group. Airframe employment held up well, thanks to advancing production schedules, but rubber producers and construction companies curtailed operations and stove and heater manufacturers cut back heavily.

Failure of holiday trade to pick up as expected led employers to hire cautiously, with the result that seasonal hiring in retail trade was 25 per cent below expectations. Only continued expansion in the service trades has offset these declines and kept the number of people actually at work about constant. Unemployment, however, has climbed under pressure of the continued influx of newcomers, a large percentage of them in search of jobs.

(Continued on page 50)

No matter what your need for lead or lead products may be . . . . or where . . . or when . . . Morris P. Kirk & Son, Inc., can now meet that demand through newly completed manufacturing and distributing facilities. New smelting plants at Portland and Salt Lake City; new central warehouse at Oakland, and smaller branches in nine other cities in the West . . . all bring Kirkson quality products and service as close as your telephone.

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Phone PIedmont 5-2511

SALT LAKE CITY
977 So. 6th West Street
Phone 90662

KIRK METALS AND ALLOYS ARE MADE TO SERVE A PURPOSE . . . *NOT A PRICE*

TEHACHAPI TO TIJUANA—

(Continued from page 48)

The California Department of Employment comments that "labor demand is lower at present than at any time during the past eighteen months"—revealing apprehension among employers and wage-earners alike. There is little wonder, then, that consumer dollars are going into hiding and can be lured out only by promise of something that looks like a bargain.

Whatever headaches may lie in wait for industrialists during 1949, there's one business besides aspirin manufacturing with a promising outlook. The Burroughs Company of Detroit pointed recently to "the growing complexities of modern business, which today require more figuring and accounting machinery than ever before," as a reason for opening a new southern California branch to serve the growing market in this area. Sales in Los Angeles, Board Chairman L. V. Britt said, are running about 50 per cent ahead of 1947 and 80 per cent higher than in 1941, reflecting need for expansion by his firm in the Western area.

Just a month after an initial five tons of exploding dynamite shattered 20,000 tons of iron-rich ore at Kaiser's newly-opened Eagle Mountain mine in the desert 200 miles southeast from Los Angeles, ground was broken at Fontana for another blast furnace and coke plant. Privately financed, it will bring annual output of the Fontana plant to 876,000 tons of pig iron. Kaiser hopes within six months to double the present daily shipments of the low-cost ore. The new blast furnace is scheduled for completion by the end of 1949. Local industrialists are hoping these developments will speed fulfillment of the recently voiced prediction that "the extreme steel shortage bogey will die a quiet death in 1949."

Rising production of automobiles at the newly opened Nash plant at El Segundo will be augmented early this year by manufacture here of all models of Willys-Overland vehicles. Steadily increasing employment among auto assemblers has continued to be a strong spot in the local manpower picture. Ford recently improved its large parts-buying program by announcing that hereafter, all scheduling of purchases will be made by the local office of the plant concerned. The move will make still more attractive to local manufacturers the opportunities offered by this year-after-year market.

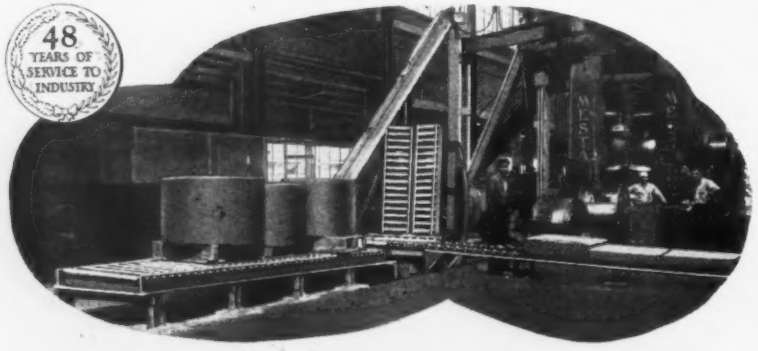
Home Base For Aircraft

Entrenchment of Southern California as a home base for the aircraft industry proceeds steadily. California Institute of Technology will be the site of two important new activities.

One is creation of a national center of rocket and jet propulsion study, under a grant from the Guggenheim Foundation. Its scientists, headed by Dr. Hsue-Shen Tsien, 38-year-old leading aerodynamics expert, will pioneer in the abstruse theoretical paths to be charted toward the Buck Rogers world of tomorrow.

Second project is launching of a series of Howard Hughes Fellowships in Creative Aeronautics, whereby promising embryo scientists will be helped in graduate study, to be followed by further research work with experienced development engineers on "frontier" aeronautical problems at the Hughes Aircraft plant. Such moves may help to break the continued shortage of technical specialists recently pointed out in this department as a current bottleneck to the military aircraft program.

A major addition to Los Angeles air facilities is taking new shape, following "sale" to that city by the War Assets Administration of the vast Metropolitan Airport in Van Nuys — for the price of one dollar. Under municipal management, efforts will be made to concentrate private flying, small aircraft maintenance, flight training, and allied activities at this field, leaving the new Los Angeles Municipal Airport as the major airline passenger terminal. Aviation Maintenance Corporation still will operate its large modification plant at Metropolitan, paying rent to the city instead of the federal government. The city hopes to develop the field also as a center for air freight traffic.



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CONVEYING EQUIPMENT
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METAL PRODUCTS CLEANING EQUIPMENT

Experiments with an eye to future business of this sort were conducted recently by Lockheed in conjunction with the U. S. Department of Agriculture. In the aircraft plant's giant altitude chamber, tests were made to determine the effect of air transportation on highly perishable fruit. Would avocados or peaches react badly to changes in air pressure . . . would lettuce wilt or tomatoes burst during rapid climbs and descents?

Out of 43 types of fruit and vegetables tested in simulated flights, with climbs and descents at 3,000 feet per minute, only one lone tomato and one persimmon blew up, while other items were unaffected. The experts concluded that pressurization is unnecessary in air freighting of fruits and vegetables, but that humidity and temperature controls appear important.

Significance of this research is emphasized by recent increases in rail rates. The West's specialty farm products such as citrus and ahead-of-season lettuce, melons, and other garden products have depended so heavily on fast transportation at moderate cost, that Western agriculturalists and aircraft makers alike have a sizable stake in such developments. Paul Armstrong of the California Fruit Growers Exchange recently lamented that even with high growing costs, it now costs more to transport a box of oranges to market than it does to grow it. Some experts feel, indeed, that one of the important trump cards in the airlines' fight to get back into the black may be exploitation of the agricultural freight market to new heights.

Arizona Gets Some Bumps

Another milestone in postwar history was passed in Arizona when War Assets Administration closed its Phoenix office at year's end, announcing that surplus property stocks in the state are sold out. Only portion remaining from the $102,000,000 worth of real estate WAA had to offer is the $6,000,000 Goodyear plant at Litchfield Park, whose 107 acres with 26 manufacturing buildings go on the block shortly.

The huge Fort Huachuca Army installation, once a major Negro troop training center, already has been turned over to the state, which is now trying to make it self-sustaining. Costs of maintenance now run $7,000 a month, the only revenues being $2,000 derived from sale of electric power produced at the site. Governor Garvey and his aides are hopeful of interesting industry in utilizing certain portions of the enormous property which are adaptable to light manufacturing. Other areas, earmarked as a state park, are being stocked with antelopes, wild turkeys, buffalo, and quail.

Farther West, Tucson is affording a preview of what may follow in West Coast cities as the long-awaited deflation of the housing situation gets under way. With closing of Consolidated - Vultee's huge modification center, that city's major industrial enterprise was gone. Offsetting this loss was a record-breaking influx of returning war veterans whose training days in Arizona had created a strong desire to settle in the West. This flood of newcomers spurred a tremendous building boom.

This season, however, the bubble is shrinking at an alarming rate. Hundreds of new homes remain unsold, new apartments are standing vacant. This is true especially of one-bedroom properties, which are badly overbuilt. Small speculative builders are becoming involved in a financial squeeze, since they cannot get loans adequate to market their properties at a down payment low enough to attract buyers. Rental units built to return $90 to $175 a month are being offered now as low as $75, without takers. Some have stood empty for as long as six months.

Missing factor is the winter tourist traffic, which has failed to reach the heights expected. The easy spending tourist with plenty of "flash money" is gone, and the majority of the people living in the area cannot or will not pay the rentals being asked.

Most impressive is the tempo of the deflation, which has come about mostly within the past six months. It is a revealing bit of prophecy for other heavily built Western centers.

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Western Industry Research Makes Excellent Showing

Western RR's Now Ahead of East in Annual Income; Bureau of Reclamation and P.G.&E. Effect Temporary Truce Over Power from Shasta

SAN FRANCISCO — It has been asserted many times that the West is lagging in industrial research, but the reports at the first annual Northern California Research here on January 12 seem to disprove that criticism.

Comparisons drawn by H. G. Vesper, president of California Research Corporation, show that the northern California area may be behind the United States as a whole in its ratio of research expenditures to gross income, but it is practically equal with the national average as regards the manufacturing output ratio. His figures are as follows:

INDUSTRIAL RESEARCH RATIOS

	United States	*Northern California*
To gross income	0.39%	0.23%
To manufacturing value	0.40%	0.38%
To total of manufacturing, agriculture and mining	0.35%	0.32%

An Impressive Showing

An impressive summary of outstanding accomplishments of northern California industrial groups was reported by him as follows:

PETROLEUM

Development of the first commercial method for producing synthetic glycerin.

Production of solvents and fertilizers from hydrocarbon raw materials.

Development of lubricating oil additives that have materially improved the heavy duty performance of lubricating oil.

Production of synthetic detergents from petroleum hydrocarbons.

Methods for using asphalt emulsions to stabilize and water-proof soil and cement concrete.

CHEMICALS

Manufacture of improved chemical insecticides, soil fumigants and weed killers for better control of agricultural pests.

Development of ion-exchange apparatus with particular reference to improved efficiency of sugar refining.

Improved process for chlorination of hydrocarbons for solvent production.

Development of improved ore flotation reagents.

Development of magnesia for refractory use.

Corrosion-resistant metal primers for industrial areas.

Solidification and consolidation of sandy and porous soils.

Special quick-drying inks for printing corrugated fiber cases.

FOOD

Development of the frothing type clarifier for improved sugar refining.

New processes for preserving and protecting foods through better canning methods.

Improved methods of removing residues on food products during canning.

ALL OTHERS

Commercial production of penicillin.

Development of blood plasma fractionation for improved medical utility.

Development of electronic equipment for thinning row crops.

Use of synthetic resins in floor coverings.

Improved underground pipe protection.

• California Manufacturers Assn. president, Fred Ortman, hands Lloyd Johnson, outgoing pres., the farewell plaque. J. Lester Perry, retiring Columbia Steel pres. (in background) has a far-off look, wondering what kind of plaque he will get from Alden Roach.

Great Western Opportunities

Industrial research opportunities on the West Coast today are in order of magnitude to those in the concentrated industrial East of at least a quarter of a century ago, according to Maurice Holland of New York, science adviser to industries and foundations. He said the movement of research Westward was shifting to a mid-America, a north to south line from Minneapolis to Houston, indicating clearly the migration from the industrial East to mid-America of a great many companies and their research laboratories in a national decentralization movement.

(Continued on page 54)

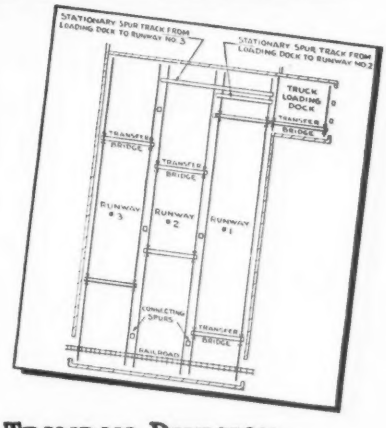
Heavy loads can be handled quickly and easily between all points in this large warehouse by the Cleveland Tramrail bridge system

LARGE TEXAS WAREHOUSE HAS *complete* TRAMRAIL COVERAGE

In the modern warehouse of the Metal Goods Corporation, Dallas, Texas, an extensive Cleveland Tramrail transfer bridge system provides overhead materials handling coverage for the entire floor area including the truck loading dock at the side of the building and a railroad spur at the end of the building. The system is so flexible that it not only can convey materials in several parts of the building at the same time, but it also can handle materials at trucks and railroad cars simultaneously.

Seven interlocking fully motorized push-button-operated floor-controlled bridges handle a vast variety of light metal plate, strips and shapes in this building which is one of the largest of its kind in the entire South.

More materials can be stored in this warehouse because they can be piled higher and far less aisle space is required.



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CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

(Continued from page 52)

The spade work being done by the San Francisco Bay Area Council goes on rather inconspicuously, but some results are beginning to show in the form of statistical and research activity. Its economic survey "San Francisco Bay Area — Its People, Prospects and Problems," prepared by Industrial Survey Associates, has been in such demand that a second printing has been necessary. Requests have been received from almost every state in the Union and from six foreign countries. Another study, "Industrial Location Factors in the Bay Area," is to appear shortly.

For the first time, reliable area-wide data on residential real estate prices, building activity, construction costs, mortgage loans and sales will become available through a real estate committee formed by the Council and the University of California. The first quarterly report is to be issued early in the year.

Western railroads, the Bay Area Council's research division reports, have made substantially better progress towards reducing fixed charges than have Eastern roads. Between 1940 and 1947, Western roads reduced fixed and contingent charges by one-third, while Eastern roads achieved only a 15 per cent reduction during this same period. The actual annual savings were $88,000,000 in the West and $40,000,000 in the East.

"These and other factors have combined to bring about a substantial shift in the net income picture. In 1940 carriers in the Eastern district earned almost one-half the net income of all railroads and carriers in the Western district accounted for about 5 per cent of the industry total. In 1947 the Eastern lines' share fell below one-fifth of the total, while over one-half the total was earned by the Western lines.

'The West first exceeded the East in traffic volume, operating revenues, and net income in 1942, and has maintained this position ever since."

Employment Sags Somewhat

Factory employment in the San Francisco Bay area for December was down 12,000 from a year ago, but the decline was mostly concentrated in the shipbuilding and food products groups, while iron and steel, printing and publishing and automobiles showed a higher employment level than in December 1947. Unemployment was 79 per cent greater than a year ago. The year-end report on indices of general business activity for San Francisco from the San Francisco Chamber of Commerce show a mixed trend, with general business conditions up 5 per cent, but postal receipts, freight car movements and other indices down.

New plants and expansion projects in northern California for November were reported by the Chamber as totaling 516, of which 286 were new plants. Total expenditures involved, $101,898,000.

From an outturn of 29,000,000 cases of canned fruits and vegetables in 1939 up to 70,000,000 cases in 1947, the canning industry has progressed into new levels of activity, marked by great advances in efficiency. The effect of this growth on the whole economy of the northern portion of the state, particularly the areas centering around San Jose, Sacramento, Stockton and Modesto is shown by the following report of Jos. Blumlein, vice-president of S & W Fine Foods, Inc., to the California State Chamber of Commerce:

"During the period of 1935-39, there was an average of 40,000 bearing acres of cling peaches in the state. The average yield was 8.2 tons per acre. The canning industry used 83.3 per cent of the total tonnage and paid an average return of $25.74 per fresh ton to the grower. In 1947, over 47,000 acres were in bearing, and production had increased to 10.6 tons per acre. The canning industry used 97 per cent of the crop and growers received $49.70 per ton, which figure is actually lower than the return during the war years and immediately postwar period.

"California Bartlett ear production increased from an average of 202,000 tons during the 1935-39 period to 295,000 tons in 1945 and 268,000 tons in 1946. In pre-

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war years, the canning industry used 35 per cent of the total crop and this figure jumped to 61 per cent in 1947. Whereas $25 per ton was the average return to growers during the late 30's, the canners have been paying around or over $100 per ton in recent seasons."

But the problem of marketing all this volume is increasingly serious, particularly on account of the railroad freight rate picture. Large canning companies, like Calpack and Hunt Foods, have hurdled the freight rate increases by buying canneries in the East and Middle West, nearer the population centers, but the smaller companies will have to find some other answer. The situation is full of contradictions, however, as is historic with the industry. Right now there is price-cutting on one hand, and efforts to sew up the 1949 tonnage of fruit on the other.

P.G.&E. is still under bombardment from the California Manufacturers Association, who are contending before the Public Utilities Commission that the corporation withheld about 5,500,000,000 cubic feet of gas from the public and diverted it to its own use in the year ended July 31, 1948. It is contended that the rates for natural gas to all industrial consumers have been increased to the point where they now merge with the rates charged residential and commercial customers, whereas the service is far inferior.

U. S. Bureau of Reclamation and Pacific Gas & Electric have effected a temporary truce in their long and bitter fight over power generated at Shasta Dam.

By temporary agreement, revocable on 24 hours' notice, the company will continue to receive Shasta power at the substation near Cottonwood and distribute it precisely as it distributes power from 75 other sources.

The agreement will prolong an emergency wartime contract.

Under the wartime contract, the company paid approximately four mills per kilowatt hour for Shasta power. The temporary agreement fixes the price at about five mills. This figure will yield the Bureau about $8,156,000 in 1949 for power from the four existing generators — an increase of more than $1,700,000 over 1948.

In addition to the higher rate, the agreement gives the company rent-free usage of the government's Oroville-Shasta transmission line.

The company will continue to deliver power to pumping plants at Tracy and at Contra Costa and to other Central Valley projects on an exchange basis—delivering four kilowatt hours for every seven received at Shasta.

It is the bureau's insistence upon similar exchange rates for other government agencies — for the Army, Navy, Air Force, Park Service and other large consumers of electrical energy—that has embroiled the bureau and the company in its legal warfare.

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REGIONAL REVIEWS
THE PACIFIC NORTHWEST

Columbia Valley Development Program Gets Under Way

Army Engineers and Reclamation Bureau Agree on Consolidated Plan and Begin Public Hearings, Which Gives Them Headstart Over Any CVA

PACIFIC NORTHWEST—Army Engineer Corps and the Bureau of Reclamation have reconciled all their technical differences in their two Columbia Basin development programs, have set up a joint committee and are now holding public hearings on the consolidated master report.

In other words, this means these two government organizations have gotten busy so that there will be less likelihood of success for any Columbia Valley Authority set up on the basis of TVA as an independent organization. When Hugh Mitchell was U. S. Senator from Washington, he introduced a bill calling for the establishment of a CVA. After being defeated at the polls in November, 1946, he is now back as a Congressman, and it is believed that he expects to introduce such a bill again.

The joint analysis revealed only minor engineering or technical deviations and these were satisfactorily solved, according to a joint announcement by Col. Theron D. Weaver, North Pacific Division Engineer of the Corps of Engineers, and R. J. Newell, Bureau of Reclamation Regional Director.

More and Bigger Dams

Both plans call for construction of multiple-purpose dams and other improvements on the Columbia River and its tributaries. The Engineers' plan, announced last November 8, calls for immediate authorization of seven new dams in addition to those now authorized or under way, with emphasis on the interests of flood control, navigation, irrigation and power. The Bureau announced their program more than a year ago, recommending similar multi-purpose projects, emphasizing reclamation but providing various other benefits.

After the hearings each state governor will be consulted for his recommendations, and 90 days thereafter the plan will be submitted to Congress for approval.

The inter-departmental set-up is similar to that under which the Pick-Sloan plan for developing the Missouri Valley is carried on, and the states of Idaho, Montana, Oregon, Washington and Wyoming, and to a lesser degree Utah and Nevada, which lie wholly or in part in the Columbia Basin, are represented on the Columbia Basin Inter-Agency Committee. That is, except for Washington, whose late governor, Mon Wallgren, refused to make an appointment, apparently because he was in sympathy with the idea of a CVA.

"Bill of Rights"

A "Bill of Rights," as the Pacific Northwest Development Association calls it, for the plan, is as follows:

1. That water and land resources will be developed and conserved in an effective and orderly manner, insofar as humanly possible, for the best interests of the people of the Pacific Northwest and the nation, for present and future generations.

2. That laws, including water rights of the United States and of the states, and local governments will be respected and followed and that these laws will not be relegated to ineffectiveness by general authorization measures or orders which nullify our property and human rights.

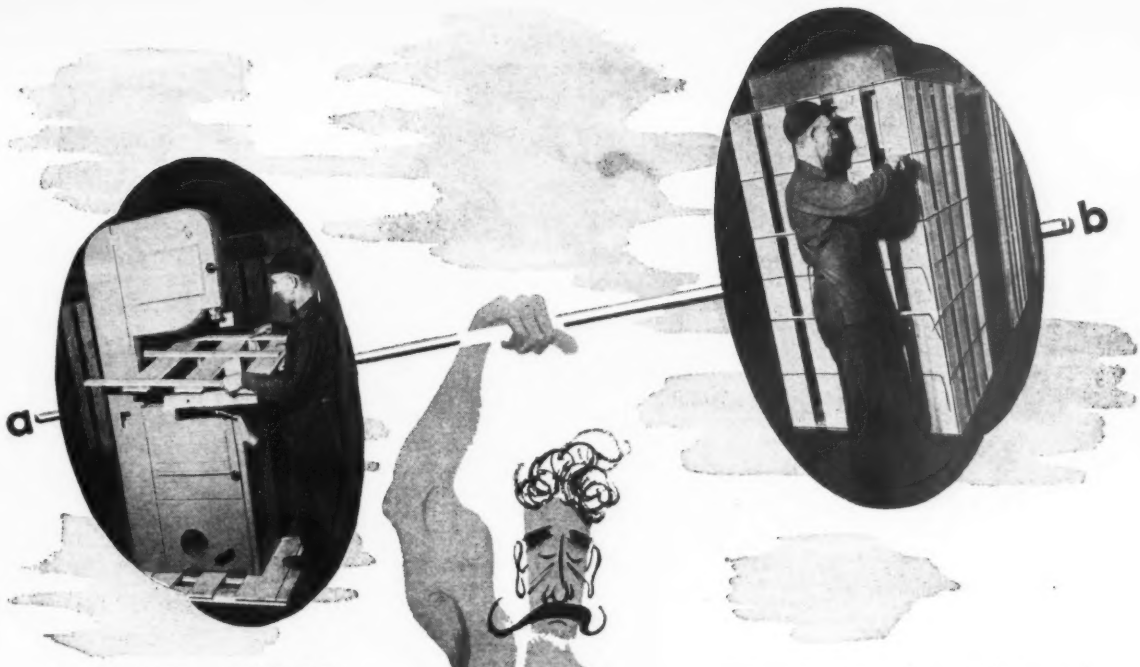
3. That existing, experienced agencies of government will continue to take the major responsibility in making and carrying out the component parts of this Plan which will continue to be submitted to the people through their respective governors and at public hearings, for their consideration and recommendation according to existing laws.

4. That the government will do only those things in this resource conservation and development program that private business enterprise is unable and/or unwilling to do.

5. That government will not seek to destroy, regiment and/or take over private business, including agriculture, but will seek to aid, consistent with sound business principles, both business and agriculture to be healthier and stronger in the Pacific Northwest. That government agencies supported by taxes will not employ personnel for the purpose of conducting educational

(Continued on page 58)

• House trailers and almost everything else are now barged from Seattle to Alaska via the Inside Passage, to reduce handling costs. Pictured is a load pulling into Anchorage.



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The result . . . a 14% saving in over all shipping weight! And more, substantial reductions in actual packaging costs! Mail the coupon below . . . see how you can save with Wirebounds!

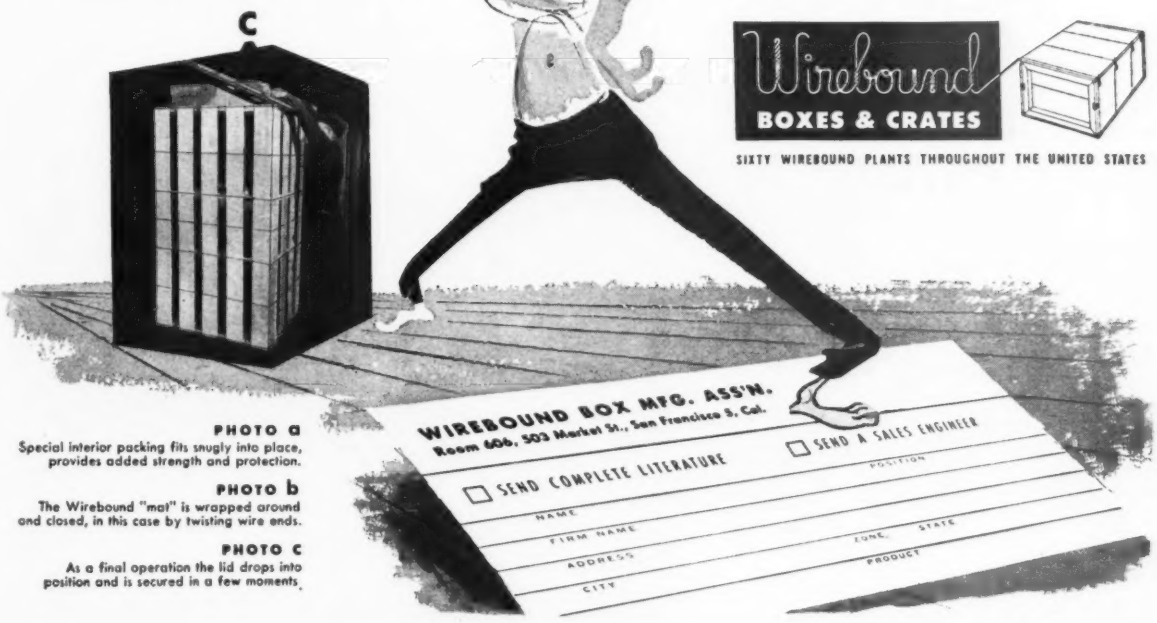

PHOTO a
Special interior packing fits snugly into place, provides added strength and protection.

PHOTO b
The Wirebound "mat" is wrapped around and closed, in this case by twisting wire ends.

PHOTO c
As a final operation the lid drops into position and is secured in a few moments.

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PRODUCT

(Continued from page 56)

programs to socialize the basic or any other industries in the region.

6. That power rates established by government on government projects be kept as low as possible, consistent with sound business principles, in paying for the cost of commercial power features of each project and a reasonable cost of irrigation projects beyond the ability of the affected water users to pay this cost in accordance with existing laws.

7. That water from and power generated within the Columbia River Basin be utilized to the fullest extent in the Pacific Northwest. That no water and power be diverted to other regions without the consent of the people of the Columbia River Basin states.

8. That government revenues from the sale of power or other resource products or services be paid into the United States Treasury and be appropriated by Congress according to the regular procedure of the appropriative processes required of all departments of the government that receive such revenue.

9. That Congress, the source from which funds are furnished to construct large projects, shall make final decisions as to what projects shall be built and when they shall be constructed. That they continue the policy of constructing first those projects that do the most good and the least harm to existing agricultural and business investments.

Cold weather in the Pacific Northwest has added to power shortage difficulties, with firms like B. P. John Furniture Co. in Portland and Pacific Car & Foundry in Renton, Wash., having to lay off men as a result. There also has been some controversy between Bonneville and several large power users. Kenneth Fisher, executive vice-president of Fisher Flouring Mills, and L. E. Karrer, executive vice-president of Puget Sound Power & Light Co. have accused Bonneville of having oversold its capacity to the aluminum industry, which Paul J. Raver, Bonneville administrator, denies.

Puget Sound Power & Light Co. has proposed a stricter power conservation plan to meet the Pacific Northwest shortage, asking the Washington state department of public utilities to issue a temporary order directing power operators to refuse any new business, or any increased business, exceeding 500 kw., or any business involving use of electricity for space heating.

Disturbing Outlook

"It has been difficult to maintain an optimistic outlook during the last month," says John D. Davis, employment commissioner for Washington. 'Unemployment has gone up faster than at any time since the winter of 1945-46, the immediate postwar period. It is almost a certainty that last year's unemployment peak will be far exceeded during the next few weeks."

He says that the lumber industry is responsible to a large extent, but that not all of the decline in lumber employment is due to market conditions. An early winter season, the waterfront strike last fall and the need for repair and maintenance work have tended to exaggerate the employment drop this winter.

Few shutdowns have been made in the last few years for repair and maintenance, according to Mr. Davis, and with the accumulation of stocks some mills reverted to what was a common prewar practice of closing for repairs. The construction industry has contributed even more to the ranks of the unemployed than the lumber and logging industries, he says.

Plomb Plows Ahead

Manufacturing of finished tools has been resumed at the Los Angeles and Jamestown, N. Y., plants of the Plomb Tool Company, after suspension of trademarking since November 24, 1948. Affidavits filed by Plomb counsel in the United States Circuit Court of Appeals in San Francisco, specified further action taken to market the company's products under the trade mark "Proto," as the latest development rising out of current trademark litigation with Fayette R. Plumb, Inc., of Philadelphia.

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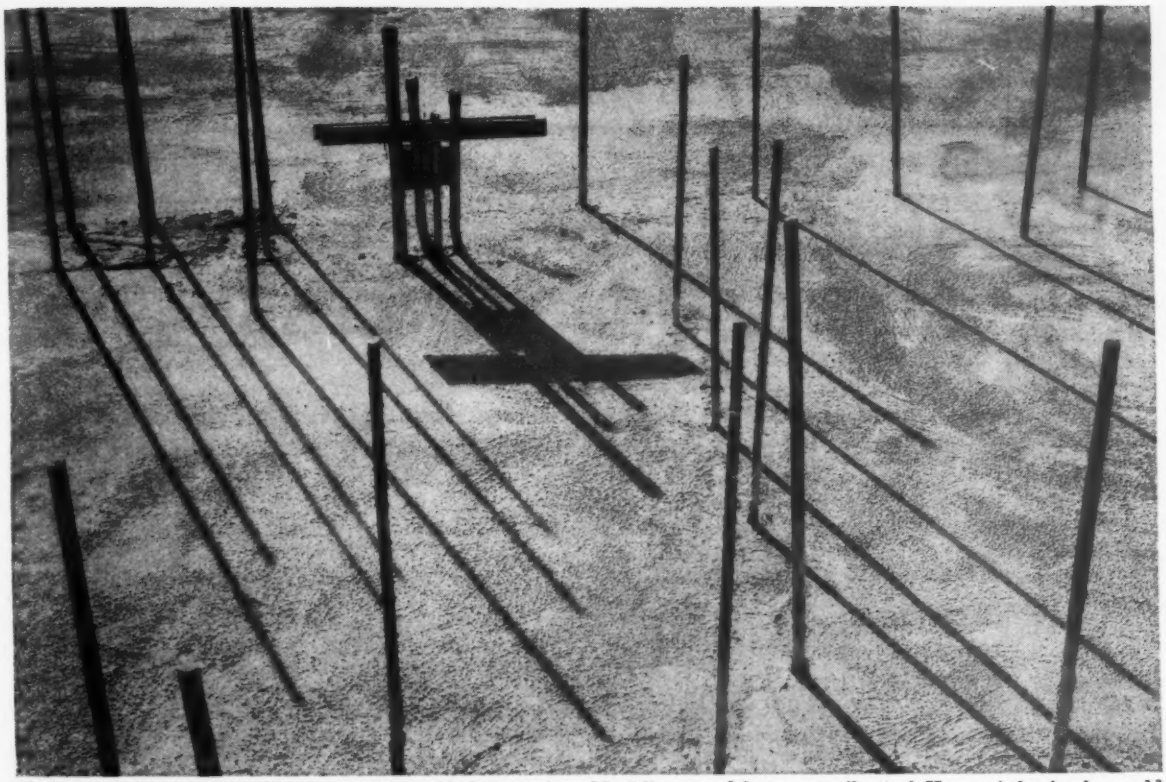

Homes for the growing West are getting added strength and building speed from versatile steel. Here, reinforcing bars add stamina to the floors in homes built in Hillsdale, San Mateo, California... one of the nation's model residential areas.

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UNITED STATES STEEL

REGIONAL REVIEWS
CONTINENTAL DIVIDE

Petroleum Becomes Colorado's Most Valuable "Crop"

Outdistances Metals, But Still Below Wyoming and New Mexico. Oil Search Sweeps Whole Rocky Mountain Area from Canada to Mexico

DENVER — Petroleum has become the most valuable "crop" among Colorado's minerals, outdistancing the precious metals that brought the state its first citizens and even outshining the vast molybdenum enterprise that led the state's mineral parade before the war.

It is hard for Colorado residents to think of their state as an oil state although they have had oil states to the north and south and southeast for many long years. Somehow it seemed that Colorado, with its towering granite peaks, would always be a mining state and an agricultural-ranching state. Those it shall be, too, but in the years ahead the "Top of the Nation" state will be noted more and more as the source of oil.

It was almost at the end of 1949 before the second pipeline outlet from Rangely Field caused Colorado's oil production to start upward significantly. And at about the same time — on Thanksgiving Day— a group of Texas and New Mexico operators brought in the Dove Creek discovery well in the southwestern corner of Colorado, setting off an exploratory tidal wave that seems certain to open up other important new oil fields in the intermountain region before 1949 is half over.

Incessant Oil Search

Colorado's production still is less than half that of Wyoming or New Mexico, but the rate of increase puts both of these states in the shade. However, Wyoming and New Mexico have added vast reserves to their already-great totals and it must be said that the successful oil-search program is sweeping the entire Rocky Mountain region from the Mexican border far northward beyond the Canadian border into the frozen Northwest Territories of Canada. It's about time. By the time the new oil fields in the Rocky Mountain region are developed and ready to hit their maximum production, older oil producing states will be dropping back fast — unless their ratio of discoveries to withdrawals takes an unexpected upturn during the years immediately ahead.

Meet the Governors

Gettting acquainted with new chief executives is a popular sport in many states of the West these days. Colorado and New Mexico decided they were doing very well, thank you, with Lee Knous and Thomas J. Mabry, respectively. But changes have occurred in Wyoming, Montana, Utah, and Arizona — and just what those changes spell to the industrialist will be awaited with a great deal of interest.

Wyoming's new governor is a distinguished educator, A. G. Crane, who was president of the University of Wyoming for many years. A Republican, he took over when Lester C. Hunt was elected to the U. S. Senate. Hunt, like Wyoming's powerful Senator Joe O'Mahoney, is a Democrat. Just what Crane will do is yet to be seen, but nothing drastic is expected. The legislature is fairly evenly divided, so there won't be any radical swings in either direction.

Montana has a native son in the governor's seat for the first time. John W. Bonner is a Democrat from Helena. Bonner is a young six-footer with a law degree from the state university at Missoula and a work record that includes mining, teaching and running an elevator. After a good record as the state's attorney general he won additional prominence in Europe as an army major assigned to war crimes cases. Back in Montana he resumed the practice of law and waged a brilliant campaign for governor with the help of one of the handsomest families in U. S. public life, including a wife and three daughters who have flashing red hair.

Raincheck on Lee

We haven't space to give you much dope on Utah's new governor, J. Bracken Lee, first Republican to run things in the Beehive state for 24 years. He is a former mayor of Price and faces an overwhelmingly Democratic legislature. Arizona confirmed its approval of Governor Dan E. Garvey, who had filled in since last May when then-Governor Sidney P. Osborn died.

The West's perennial Santa Claus, the U. S. Department of the Interior, may get his whiskers shaved off and emerge looking like Herbert Hoover if certain proposals now being bruited about Washington find a pleasant reception there. It is a cinch the Hoover Commission's suggestion to just abolish the Interior Department will strike fire in the West. Efforts to murder the whole department aren't so very different from past attempts to cut it off at the pockets, but this time the opposition to such moves seems powerful enough to preserve the status quo.

Interior Upset?

The Hoover report on governmental reorganization suggests that many of the Interior Department's functions ought to be tossed over in the Agricultural department, particularly that of land use. The Bureau of Land Management now is getting its feet wet administering oil and gas leases and handling a lot of very technical matters that relate to mining but have nothing to do with agriculture. Agencies not slated for absorption by the Agriculture department would go into a new Department of Public Works and Resources where the Army Engineers and the Bureau of Reclamation could fight it out like the gingham dog and the calico cat and probably with the same result. Reclamation experts, geologists, mining men — nearly everybody who deals with the Interior department— feels that the proposal of the Hoover Commission is unrealistic, dangerous and plain darn foolish.

Metals Output Up

With the West's farmers and ranchers still puzzled as to where to store their money, after an unprecedented number of "good years" and only a mild price dip in store for 1949, there isn't any question about the good health of that end of the

economy of the Rocky Mountain region. But how about mining, so often the sick man of the area?

Bureau of Mines summaries for the year 1948 show the following results.

U. S. mines hit an all-time high in dollar-volume output in 1948, though the 26 per cent gain in dollars represented only four per cent increase in tonnage, over 1947. Mineral fuels scored the greatest gain in the one year — 30 per cent increase. Other non-metallics went up seven per cent, and metals went up 27 per cent. Tonnage of metals increased 2.9 per cent over 1947.

Among the metals, steel and aluminum exceeded 1947 production but copper, zinc, lead were somewhat lower. Molybdenum was 'way up and mercury was 'way down. Mine shipments of manganese dipped four per cent while chromite tripled, tungsten went up 29 per cent and molybdenum went up 22 per cent.

A strike at Bingham, Utah, accounted for copper production's slip under the 1947 figure but it was a whale of a year for copper and higher prices more than offset the drop in tonnage. Zinc and lead output followed the same pattern.

We're a mess so far as raw materials for producing aluminum are concerned. Imported nearly two-thirds of our bauxite needs in 1948, although domestic production scored a notable increase. Magnesium continued to mark time at low production levels not because of any difficulty in producing it or utilizing it but because its advantages haven't been sold to the American public enough to establish a real market. A big supply of scrap magnesium contributed to the poor production picture in 1948.

Gold and silver mining languished even lower in 1948 than in 1947, chiefly because marginal operations were caught in the inflationary spiral with increased costs wiping out slim profit margins and government price fixing holding the selling price of the product to unprofitable levels. Gold showed a little gain and silver somewhat more but both are in need of some sort of transfusion, probably political.

All time record shipments were made of certain important non-metallic minerals including sulfur, lime, salt, phosphate rock, potash, cement, gypsum, stone, kaolin, barite, talc, boron minerals and vermiculite. Feldspar was up over 1947 but still below the 1946 peak.

Petroleum increased eight per cent over 1947 with all-time-high output recorded. Marketed natural gas increased 10 per cent, natural gasoline and other light products went up nine per cent of which about one-third was liquefied petroleum gases.

Bituminous coal and lignite dropped five per cent below the record tonnage of 1947, anthracite tonnage dropped a shade due to warmer-than-normal weather. Coke and coal chemicals hit a new-high tonnage and dollar value of coke produced went up nine per cent while that of coal-chemical materials zoomed 25 per cent over 1947 figures.

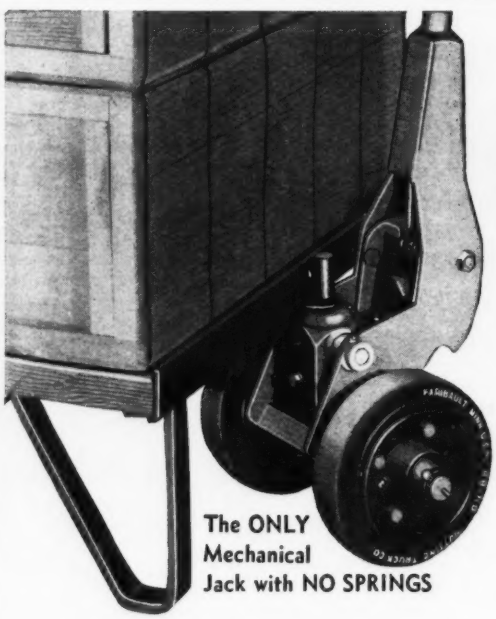
These national totals have particular significance for the Rocky Mountain West, particularly in non-ferrous metals and certain of the other categories. 1949 seems to be a year when even those who own gold mines might eke out a little profit, particularly if the supply of labor continues to improve as it has in recent months.

Sliding Into 1949

As the situation early in 1949 becomes a bit less complex, after a very uncertain attitude on the part of most businessmen at the beginning of the year, these facts stand out for anyone in touch with the Rocky Mountain scene.

Chambers of commerce, particularly the one in Denver, will have to watch their p's and q's a bit more carefully if they want to have a vestige of influence in Washington and among independent businessmen. There is a feeling that many of the chambers were sucked into the wrong side of the basing point controversy because of their alacrity in jumping whenever big business whistles. Now it seems that

(Continued on page 63)



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MATERIALS HANDLING

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Nutting Live Skids are sturdily built to Nutting standards of quality. They take the grief year after year! A large range of standard platform sizes, with superstructures available if desired. The Nutting Jack-Skid System is outstanding—investigate!—compare! NUTTING makes everything in floor trucks, wheels, casters. Ask your nearest representative for Bulletin 48-G. See names below.

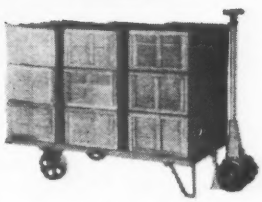

FIG. 421. Standard Industrial Skid, 9 platform sizes from 24" x 48" to 42" x 72". Capacity 1800 lbs. Metal or Rubber-tired Wheels.

FIG. 420. Heavy - Duty Industrial Skid, 9 platform sizes as above. Welded angle steel frame. Capacity 2800 lbs.

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E. C. Buehrer Co., 562 Bryant St., San Francisco
F. E. Bennett Co., 426 N.W. 6th Ave., Portland 9
Secord Sales Co., 95 Connecticut St., Seattle, Wash.
H. H. McVeigh, West 310-12 First Ave., Spokane 8
Equipment Supply Co., 60 Richards St., Salt Lake City
McDonald-Hunt Scale Co., 1540 Wazee St., Denver
Egan W. Jones, 5th Ave. at Jackson St., Phoenix
Lee and Chapson, 755 Sheridan Street, P. O. Box 2822, Honolulu 3, Territory of Hawaii

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WAREHOUSE AND OFFICE:
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CONTINENTAL DIVIDE—

(Continued from page 61)

the chamber of commerce must choose whether it wants to represent a handful of big businesses that really would like to have monopolies or whether the chamber wants to represent the general run of industry and business which still prefers the competitive system. Here and there a chamber may startle everybody by swinging in with little business.

Money so abundant as it is now can't help keeping the wheels of industry moving at a merry clip, with relatively few soft spots and those mostly in textiles and other soft-goods that outran their boom period some time ago. Mountain states' purchasing power not only is at a terrifically high level but will stay there in the years immediately ahead, according to experts who are anything but gullible.

Labor supply is improving, definitely. While unemployment isn't posing any great problem, the day when any half-wit could command a fancy wage is past. Now only well-connected half-wits get such wages, and ordinary workmen are beginning to discover that "Yes, sir!" is worth substituting for "Oh, yeah?"

The pendulum has swung backward toward sanity and each swing brings it a bit nearer the status desired by industrialists and businessmen generally.

Uranium Geology Is Made Available

The United States Atomic Energy Commission announces that factual data obtained by exploration during World War II and by the large scale exploratory drilling operation being conducted today for uranium ore in the Colorado plateau areas will be made available to legal owners of claims.

Previously geological data obtained from work during World War II were not released because of security regulations. Today persons holding patented mining claims may obtain this information relative to their claims upon proof of ownership of the claims. A statement from the local tax assessor to the effect that the person requesting the information is currently liable for the tax, or a certificate from the county recorder that the claim is patented in the name of the person requesting the information, and that said claim has not been transferred, will be accepted as proof of ownership.

Holders of unpatented claims may receive such information upon submission of a certified statement from the county recorder that notice of location and notice of intention to hold in lieu of a statement of assessment work for 1948 have been filed by the individual requesting the information.

Request for these geologic data should be addressed to Dr. Wallace G. Fetzer, U. S. Atomic Energy Commission, Box 270, Grand Junction, Colorado.

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REGIONAL REVIEWS
THE WASATCH FRONT

Utah Has Good Year Behind It And Another One Due Ahead

Steel, Coal and Petroleum in Expanding Stage; Copper Fabricating Industries Due; Uintah Basin Gilsonite Deposits Are Being Utilized

SALT LAKE CITY — The Wasatch Front enjoyed another boom year in 1948. The industrial payroll reached an all-time high, farmers and livestock men prospered and business generally was good, although there were signs of softening in some lines (retail trade for example) at the year's end.

Power consumption was at a peak and all signs pointed to a continuation of an upward trend in this measuring rod during 1949. While Utah industrialists and businessmen looked into the new year with vague apprehensions and misgivings, the non-psychological factors suggested optimism rather than pessimism. In fact, it could be logically argued that this area is in a preferred position for 1949 for several reasons. Among them are these:

The products of the state's most important basic industries — steel and nonferrous metals — are still in short supply.

Coal-Electric Power

Installations of large coal consuming power generating plants in the intermountain and Pacific Coast states promise an expanding market for the state's bituminous coal industry.

The oil exploration boom has produced sufficient results to keep it going for some time, even without important new fields.

Pre-January snowfall has been the largest since precipitation records have been kept, assuring a good supply of irrigation water for agriculture.

The copper refinery now being built by Kennecott Copper Corp. will open up new possibilities in the way of fabricating industries.

So unless national or world-wide economic dislocations disturb the local scene, 1949 should be a prosperous year.

Among the new things promised for the area during the next year is the utilization of the Uintah basin's gilsonite deposits by the oil refining industry. The American Gilsonite Company (jointly owned by Standard Oil of California and the Barber Oil Corporation of New York) recently announced that it planned to liquefy the gilsonite, transport it to Salt Lake City in Standard of Californias new Rangely pipeline and refine it in the same manner as crude oil is refined.

Gilsonite Plant Coming

A plant to make the gilsonite soluble will be built at Bonanza, Utah, next spring at a cost of about $300,000. And if the scheme works out as its originators expect there may be some larger developments in this field of chemical engineering. The contemplated Bonanza plant will mill the solid hydrocarbon to a fine powder, after which it will be heated with oil from the pipeline. The mining operation will be converted from underground to the open pit method as a means of increasing producting and reducing costs. The liquid gilsonite will probably be used at first for the manufacture of heavy oils, heating oils and asphalt.

Heretofore the product has been used principally in the manufacture of electrical insulation, special varnishes, storage battery boxes and rotogravure inks.

That the state can use some new industries, and especially the tax revenues they would produce, is emphasized by the requests of state departments and institutions from the 1949 legislature. Institutions which received $49,500,000 from the 1947 legislature are asking for $81,500,000 for the next biennium—a matter of $32,000,000 more than anticipated revenues. And that total does not include some $8,000,000 sought for new buildings.

The institutions are not going to get what they are asking for, of course, but their heavy demands will increase the pressures for new or increased taxes.

Cities and counties are clamoring for more funds and they have a strong lobby to press their demands. Officials of their organizations are currently thinking in terms of an additional one per cent sales tax, the revenue to be distributed to local governments on a population basis, or enabling legislation to permit local governments to impose sales or income taxes.

School districts will also be in the scramble for more tax money, either by way of direct state appropriation or enlarged taxing powers. And the argument they will emphasize this year is the need for new buildings.

All in all the new governor and 1949 legislature are going to have to disappoint tax expending agencies or infuriate taxpayers on a larger scale than any of their predecessors have had to do.

Steel fabricators of this area are waiting to see what their 1949 allocations from Geneva are going to be before pressing their campaign for a larger slice of the plant's production. They were assured by Columbia Steel Company officials at a recent conference that a real effort would be made to at least partially meet their demands. But they got no definite commitments in terms of tonnage.

Gripe at Geneva

The local fabricators take the position that the Geneva plant is obligated to treat them with some extra consideration, inasmuch as other steel companies have pulled out of the area. But Columbia officials made it quite plain that they feel a special obligation to take care of fabricators whose early tonnage commitments made the purchase and peacetime operation of the plant economically feasible.

A particular gripe of the local fabricators is the amount of steel going from Geneva to Western Consolidated Steel Company in Los Angeles, now owned by United States Steel Corporation. But as Columbia officials pointed out to the complaining fabricators, Consolidated's commitments were one of the major factors in making Geneva a going concern at a time when no one anticipated the present competition for steel supplies.

For a holiday that's really unusual, visit this unique resort blessed with an invigorating, health-building climate. Near Las Vegas is gigantic Hoover Dam, an unforgettable spectacle . . . also amazing Death Valley, a delightful oasis in colorful desert land surroundings.

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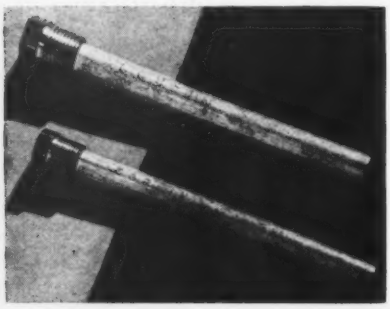
872-M



Cor-in Zinc Plugs Inhibit Corrosion

Zinc rods screw easily into heat exchangers, piping and other hydraulic equipment to protect them against corrosion. The rods come in ⅜ in., ½ in., ⅝ in., ¾ in. and 1 in. diameters, with lengths up to 12 inches. These rods extend the protection of galvanizing, and keep on protecting equipment for years after galvanizing has eaten away. They are useful in refrigeration equipment, industrial radiators, heaters, diesel engines and water and oil coolers, and are made by Rotometals, Inc., San Francisco, Calif.

873-M

Plug-in Strip Runs Around Baseboard

The new Plug-In Strip, made to run around the baseboard or chair-rail molding of offices, gives maximum opportunity to plug in business machines and desk lamps. It provides for electrical outlets at either six-inch or 18-inch intervals around the wall for plugging in electric typewriters, clocks, check protectors, adding machines, and is listed by Underwriters' Laboratories. The manufacturer is National Electric Products Corporation, Pittsburgh, Pa.

874-M

Second Ceiling Underneath Lighting Fixtures Eliminates Glare

Cell-Ceil is a new prefabricated, louvered all-steel material made up in honeycombed panels that fit together into a single continuous ceiling when hung below the lighting fixtures of an old ceiling, to deliver a diffused, even illumination, free from glare, and has wide application for business offices and factories where it also serves as a decorating aid by concealing ceiling pipes, sprinkler systems and air ducts. It is made by Federal Enterprises, Chicago, Ill.

875-M

Seated Driver Stacks Materials

The gap between motorized hand truck and fork truck operations is neatly bridged by the new Transrider Stacker, a product of Automatic Transportation Company, Chicago, Ill. While the new unit has all the useful features of a regular-type stack truck, it is suggested that by providing a place for the operator to ride on it, he will use less energy and the job of materials handling will be performed more efficiently. The truck operates on two batteries and can maneuver in such small spaces as the insides of boxcars and trailers.

876-M

Employee Suggestion Box

Executives interested in stimulating the flow of employee ideas on cost cutting, time saving, work improvement, etc., should look into a newly designed steel suggestion box, which comes in a silver finish, with detachable panels mounted on either side to hold plant posters. It is made by Elliott Service Company, Mt. Vernon, N. Y.

For Your Convenience . . .

Use this postage-paid card to obtain further information on products mentioned on these two pages and on literature listed on the following page . . .

877-M

Diesel Cooling Systems Kept Free From Impurities

A silver-plated copper coil around a metal core, acting on the galvanic cell principle, is the basis of the Butler De-Scaler units, designed for the prevention and removal of rust, corrosion and scale in the cooling systems of Diesel and large gasoline power engines. The new EZ series includes types for cooling systems having a water capacity of from 50 to 600 gallons. The units are installed on the water exhaust line, close to the motor, and it is claimed by their makers, Butler Engineering Co., New Orleans, La., that by keeping the cooling water clear, internal motor troubles and oil consumption will be reduced by affording better heat transfer from engine cylinders to the coolant.

878-M

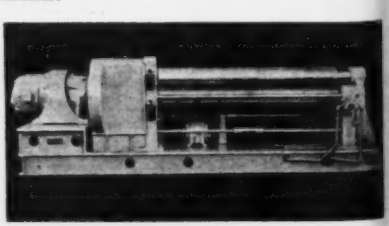
Weld Cleaning Tool Now Has Brush in Handle

The Multi-Pic Weld Cleaning Tool, made by Bernard Welding Equipment Co., Chicago, Ill., a weld cleaning hammer with an aluminum alloy handle attached to five tool steel heads, is now made still more useful by being provided with a wire brush screwed into the top of the aluminum handle, for brushing away loosened slag, oxides and rust from welded parts. As the brush wears down, it may be unscrewed, another usable portion of the brush drawn out, and the screw again inserted, thus making the brush usable down to the very end.

879-M

New Metal Roll Designed by Valley

A new metal roll for production of pipe, well casing and general metal rolling has been designed and is now being manufactured by Valley Foundry & Machine Works, Inc., Fresno, Calif. The machine, which is capable of rolling heavy gauge and alloy steels, has three cylinders, an all-steel frame, and is designed for constant-use high production. Sizes and lengths are manufactured to suit particular requirements.



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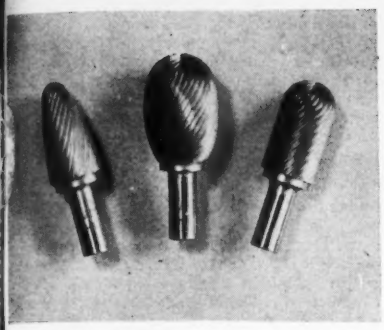
880-M



Carbide Mills in Larger Sizes

Severance Tool Industries, Inc., Saginaw, Michigan, have added three new numbers, each the largest of its respective popular shape, to their line of Carbide Midget Mills. The manufacturers claim that these mills give equal or better finishes on many jobs than grinding, and that they allow dust-protective equipment to be dispensed with, effecting both savings and convenience. Besides being used in freehand manual operations they can be chucked in machines and the work manipulated either manually or mechanically.

881-M

Zipper Repair Kit

At last they have invented a zipper repair kit — it consists of three plier-like tools no bigger than a dentist's extraction equipment. The tools repair any size zipper on the market in a fraction of a minute, say the manufacturers, and are very simple to use. The set, which should be useful in almost every industry, is made by Glenzip Company, Chicago, Ill.

882-M

Lift Tool For Heavy Truck Tires

A tool designed to enable tire men to lift heavy truck tires and align them with the wheel studs for quick and easy attachment is made by Cam Tool Co., Inc., Oakland, Calif. The lifter, which enables one man to lift the tire and wheel with one hand, rolls easily into position under any tire from 6.00-16 to 11.00-22, and may also be used for removal or replacement of rear axle-brake drum-wheel assemblies as a unit.

883-M

Canned Plastic Sprays On

Krylon, a transparent plastic coating, is sprayed on surfaces to make them highly resistant to discoloration at high temperatures, water, alcohol, alkali, acids, mineral oils, grease and chemical fumes. It comes in a compact sprayer, which is operated by pressing the button at the top of the can with the index finger. One of the uses industry is finding for it is to use it as a protective coating for products until they get to market. Foster & Kester Co., Philadelphia, Pa.

884-M

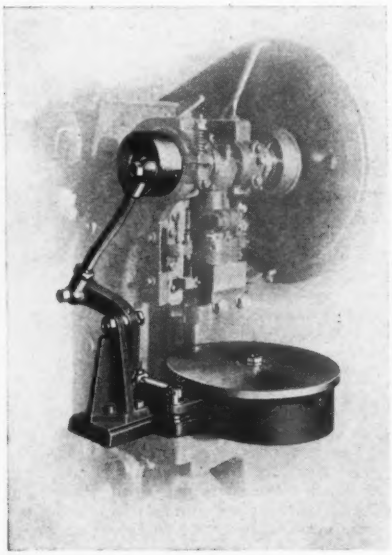
Handy Business-Card Index

Almost all business executives have constant occasion to refer to business cards, and will welcome a new invention for filing them, consisting of a 7x5 loose-leaf ring binder which is set up to file the cards in an overlapping, visible-reference type file. This binder, which is small enough to be easily portable, is made of black imitation leather and comes with an alphabetical index. Recordplate Co., Pasadena, Calif.

885-M

Dial Index Feed For Punch Presses

An automatic dial index feed for punch presses, offered by De Castro & Associates, Huntington Park, Calif., has a table which can be adapted to an ordinary punch press, large or small, without altering the press; die space on rear of table is 3½"x3¾", and overall height is 3½". The "Speedex," claim its manufacturers, will permit a press to operate continuously, either hand fed or by means of a magazine or hopper, thus increasing production three to six times.

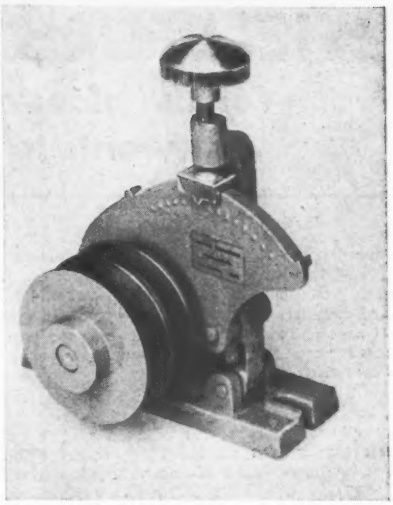


886-M

Bundling Machine Wraps Small Packages

A new smaller size bundling machine, the Model F-10-J, will appeal especially to drug, food and other producers whose products are packaged in comparatively small sizes. It bundles the goods in Kraft paper fed from a roll and applies gummed end-seals fed from a roll; it is adjustable for bundles within the following size range: 5 inches to 12 inches long, 3½ to 7¼ inches wide and 2 to 4¼ inches high. Speed of the machine is adjustable from 8 to 24 bundles per minute. It is made by The Package Machinery Company, Springfield, Mass.

887-M



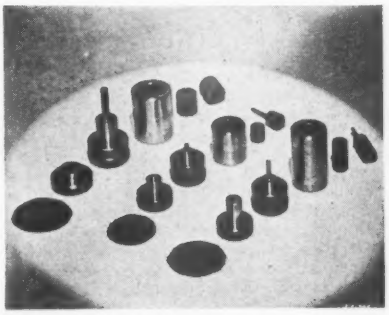
Improved Variable Speed Transmission

Main point of improvement of the new smaller size variable speed transmission, made by Standard Transmission Equipment Company, Pasadena, Calif., over the previous model is the introduction of a hardened and ground shaft rotating in a fully sealed double ball bearing assembly; the new design increases life of the drive and increases power output through reduction in frictional losses. Overall width of the motor is 6½"; overall height, 9".

888-M

Carbide Lining Protects Steel Molds Against Abrasives

"Wear-proofing" of steel molds used to form abrasive wheels with a lining of Carboloy carbide greatly reduces the mortality of the molds, the service life of which has always been notoriously short, according to abrasive wheel manufacturers. The molds are used to make smaller sizes of mounted abrasive wheels and "points" used on small, high speed grinding machines, and the carbide lining protects them from the gouging action of the abrasive crystals during molding. Carboloy Company, Inc., Detroit, Michigan.



HELPFUL LITERATURE

For the plant operator who wants to keep informed

Fine, Dry Materials slide through the plant in a new type of conveyor system called "Airslide," recommended for conveying a variety of fine materials like soda ash and gypsum. An 11-page photographic essay describing the process is put out by *Fuller Company, Catasauqua, Pennsylvania.*

Checklist For Sales Managers — The 59 pamphlets, booklets and research studies on sales management, marketing and packaging put out by the American Management Association, New York City, are listed in a new pamphlet. These studies should prove of great interest to anyone connected with the sales end of a business.

Materials Handling Case Histories — Soft drinks, plywood, canned goods are all handled with fork trucks, and the 23-page "Case History" issue of the current Material Handling News presents detailed analyses of modern mechanized handling methods in these and many other kinds of industries, and the economics they effect. The magazine is made available by the *Clark Equipment Company, Battle Creek, Mich.*

Copper Alloys Reference Handbook—The *Bridgeport Brass Company, Bridgeport, Conn.,* have just issued a very comprehensive, 128-page technical handbook on copper-base alloys, with complete information on their properties, uses and specifications. Chapters on metal cleaning and drawing lubricants are included, with 27 pages of weight and measurement tables. The handbook has been prepared as a reference work for engineers, designers and purchasing agents, to whom it is available free of charge.

Postal Rate Chart—A free postal rate chart to hang up in your mail room is offered by *Pitney-Bowes, Inc., Stamford, Conn.,* makers of postage meters. The chart measures 12x18 inches and covers the new 1949 rates on all classes of mail. A useful feature of it is a side-by-side listing of air and surface parcel post rates by weight, providing an instant cost comparison, and it also lists the fees for foreign mail and for special delivery, insurance, c.o.d. and special handling.

For Your Plant Cafeteria—How much money do oversize portions cost cafeterias? In some cases the loss may run as high as 10 cents per customer, says George L. Wenzel, nationally-known food expert. He has written a 52-page booklet, "Portion Control and Food Cost Manual," under the sponsorship of the *Paper Cup and Container Institute, Inc., New York.* The booklet shows how the plant cafeteria manager can more accurately regulate food portions through the use of varying sized paper cups.

Sound Control—*Johns-Manville, New York,* have issued a new 16-page booklet showing how various sound control and acoustical problems have been solved through the use of their special sound-absorbent building materials. Photographs illustrate some of their typical installations, with construction details showing latest application methods. Also included is a listing of pertinent data on size, weight and sound absorption of the different materials recommended.

Your Own Welding Business—"How to Start and Operate a Profitable Welding Business," a new 64-page booklet, takes the reader through a step-by-step plan for starting and operating a job welding business; it offers money-making suggestions for job welding shops, blacksmith shops, sheet metal shops, machine and tool shops and ornamental iron works. Photographic illustrations show what opportunities are available for the aggressive welding operator. The booklet is put out by *The Hobart Brothers Company, Troy, Ohio,* and costs 10c.

744 Safety Posters in two, three and four colors are illustrated in a large 72-page Director of Occupational Safety Posters, prepared by the *National Safety Council, Chicago, Ill.* The posters, which are all available from the Council, for use in maintaining plant safety, are listed under 15 sections, such as Safe Handling of Tools, Motor Transportation, Chemicals and Gases, Materials Handling and Machinery, to name a few. The directory is their new 1949 edition and costs 50c.

Junior Catalog 487—The tenth edition of the widely known pocket-size catalog put out by *Barrett-Cravens Co., Chicago, Ill.,* is filled with information on their entire line of materials handling equipment and the specific purpose for which each unit is useful.

Electrical Equipment Catalog — *General Switch Corporation, Brooklyn, N. Y.,* announce a new 68-page technical catalog, containing full details on their line of enclosed safety switches, service entrance equipment, wireways, fittings. Two useful features of the book are tables for selection of switches, wire and fuse sizes, and a cross-index of comparative catalog numbers for ready conversion from other manufacturers' part numbers.

"Clean Oil," a quarterly publication put out by *Honan-Crane Corporation, Lebanon, Indiana,* tells how one firm saves more than $30,000 by using a central coolant clarification system. Other case histories reported in the publication tell of further savings in industrial, marine and power installations of the Honan-Crane equipment, including the story of an oil purification installation in the Kaiser-Frazer engine-testing department in Detroit.

Information on Die-less Duplicating — An original process for "Die-less Duplicating" of parts or pieces to die accuracy through the use of precision machines as die substitutes is described in a 40-page catalog put out by *O'Neil-Irwin Manufacturing Company, Lake City, Minn.,* which contains complete photographic records and descriptions of the steps involved in the use of their machines.

"Successful Bottle Labeling" is the title of a booklet which has just been printed by *National Adhesives, New York, N. Y.* First issued in 1941, in its revised form it contains helpful information on the selection of the proper type of adhesive for applying all types of labels to glass surfaces, and contains a number of charts presenting various common labeling difficulties together with descriptions of their causes and methods for correction.

Smoke Control — Too much smoke is bad—costly to adjacent property owners and wasteful of fuel; a perfectly clear smokestack, on the other hand, also means inefficient operation. The Brooke Smoke Indicator, an "electric eye" type mechanism, flashes a red warning light when smoke density rises too high; another mechanism turns on over-fire air jet. *Brooke Engineering Co., Inc., Philadelphia, Pa.,* describes these operations further in an eight-page diagrammed catalog.

Sliderule Type Load Selector Offered Free —Of interest to architects, contractors, maintenance men, materials handling personnel, engineers is a "load selector" in the form of a vest pocket size sliderule which estimates quickly and accurately the amount of weight which can be supported by the various types of Unistrut metal sections under varying conditions of span and unbraced height; conversely, the selector also provides the various combinations of Unistrut sections required to support a given load. It is available without cost, made by the *Unistrut Products Company, Chicago, Illinois.*

Booklet on Water Demineralizers—*American Cyanamid Company, New York, N. Y.,* explain in an interesting 26-page booklet the chemical and mechanical principles of demineralization of water and the advantages of demineralizing water over distilling it, and they give data on calculating costs for demineralizing various raw waters. The booklet is called "Filt-R-Stil Demineralizers Deliver Low-Cost Chemical Equivalent of Distilled Water"; first issued a year ago, the new edition contains the latest changes in specifications, models available and performance data for each of the units.

Infrared in Industry — Actual plant photographs in the bulletin issued by *The Fostoria Pressed Steel Corporation, Fostoria, Ohio,* show their infrared heating being used by an automobile manufacturer in Detroit to bake the paint on his automobiles, by a company in Chicago to silver their mirrors, by an Ohio manufacturer of aluminum bathroom tile. The booklet cites many other users of the heating equipment, and describes the advantages derived therefrom.

Adhesives Information — A revised catalog section on adhesives has just been published by *The B. F. Goodrich Company, Akron, Ohio.* It describes the range of the company's adhesives and their applications, gives classifications of various types of rubber cements and service requirements and lists the different products. Data on standard containers are included.

Heat Without Blast—High capacity heat output without excessive blast, cabinet styling to blend with and enhance the appearance of lobbies, auditoriums, commercial buildings and similar locations — these are two of the features of the Young cabinet unit heaters described by *Young Radiator Company, Racine, Wisconsin,* in their four-page brochure containing diagrams and descriptions of the three basic types they manufacture.

Elevator Operator's Manual — A small pocket-size 16-page booklet just published by the *National Association of Building Owners and Managers* is the "Elevator Operator's Manual," of which 20,000 copies have already been distributed by the Association to help promote safer and more efficient operation of the nation's elevators through proper instruction of their operators.

Always Room at the Top—"Make Ceilings Pay Dividends" is the title of a new 28-page book put out by *Link-Belt Company, Chicago, Ill.,* on the advantages of trolley conveyors in any number of orthodox uses in materials handling as well as some unusual ones, such as the trolley conveyors that are electrified with bus bars along conveyor track, to provide current for continuous testing of such articles as electric fans. Some 80 illustrations depict a great variety of actual installations.

Reading Guide For Western Management

A service for all management levels . . . current literature surveyed and appraised by the faculty of the School of Management, Golden Gate College

The American Economy: Its Problems and Prospects

By Sumner H. Slichter. Alfred A. Knopf, New York, 1948. $2.75.

At the summer business conference at Stanford University in 1947 Professor Sumner Slichter of Harvard explained the facts of U. S. economic life with welcome clarity to several hundred business men who were more or less confused by what they had seen and heard since they studied Taussig or Marshall in their college days.

Now the very able Harvard economist has revised those memorable Stanford lectures in the light of what has happened in the past year and has put them into a book that might well be called the business book-of-the-year.

"The great strength of our extraordinary economy," says Mr. Slichter on the first page, "is little appreciated by the people of the United States, and even less by the people of other countries." Our economy is becoming a "laboristic" one, he says, and its prospects are much in dispute. He then announces his purpose — to examine the basic character of the economy, to explore three of its major problems, to analyze its prospects, and to attempt an appraisal of its good points and its weaknesses.

The first chapter identifies and describes five principal characteristics that distinguish the American economy: it is predominantly an economy of private enterprise; it is a laboristic economy—or rapidly becoming one; it is highly competitive; it is highly dynamic; and it is highly self-sufficient."

The next four chapters deal with the three major problems of labor relations, stability, international economic policy, and investment incentives. These very difficult problems, Mr. Slichter believes, are by no means insoluble, and he describes the means by which he thinks they must be solved. He goes into particular detail on the subject of world recovery, and argues vigorously for tariff reduction.

In weighing the prospects of continuing prosperity Mr. Slichter first builds up a very pessimistic case, and then places beside it an optimistic one. He concludes that the latter is the more persuasive, and makes his reasons clear.

"How Good Is the American Economy?" is the title of the final chapter. There are seven tests, the author says, that a good economy should meet — increasing output, reasonable security, adaptability to new conditions, fair distribution, balancing of producers' and consumers' interests, partial distribution on the basis of need, and prevention of uneconomic incomes. After exploring each of these points in detail Mr. Slichter says again that the American economy is a far better one than most people realize, with fair prospects of continuing improvement.

In the final pages of this most interesting book the Harvard economist reverts to the international scene, and takes the view that our ability to meet the challenge of Russia is probably improved by the shift of power from capital to employees. "The new laboristic society that is emerging in the United States has an opportunity to build far better economic institutions than the world has ever seen," he says, and whether you see it that way or not you will be stimulated by Mr. Slichter's close and clear reasoning, transmitted in language that everyone can understand.

Reviewed by:
STUART PARRY WALSH
Lecturer in Fundamentals of Business and Sources of Business Information.

A Guide to Technical Writing

By W. George Crouch and Robert L. Zetler. The Ronald Press Co., New York, 1948. $4.00.

Engineers, production men, and others who must present written evidence of technical research will welcome this long-needed book on the art of writing. Those who are accustomed to seeing report writing books as the supreme violators of their own advice will be pleasantly surprised with this one. The authors have managed to write in plain everyday language and prove that even engineers' jargon can be humanized.

Actually, it is one of the first such books that is really interesting to read — short sentences, generous use of pronouns, frankness — all make it an extremely worthwhile guide for practically anyone concerned with writing.

The first chapter is titled "An Engineer's Day." Here we follow the engineer about his daily routine of answering letters, correcting customers' bulletins, attending conference discussions, and preparing an engineering article. There follows a completely adequate treatment of the business letter, including all the major types; and it is heartening to see this subject treated as though the engineer were concerned with favorably impressing his clients and fellow workers. The technical and semi-technical article and the technical report are given excellent attention; it seems highly improbable that a better treatment could be found anywhere. There is even a section on speaking techniques which is packed with many fine suggestions for approaching the audience and maintaining their attention. A very useful index to English usage and language essentials occupies the latter part of the book. It is one of the best things we've seen and should make a convenient handbook to those who need guidance in some of the more confusing aspects of our tricky language.

All in all, we would rank this book very close to the top in its field, if not in number one place. It is outstanding.

Reviewed by:
ROY W. POE
Lecturer in Business Writing and Office Management.

Briefer Guides From The Management Library

Industry-Wide Bargaining

By Leo Wolman. The Foundation for Economic Education, Irvington - on - Hudson, New York, 1948 (pamphlet).

The trend in America at present is toward an increasing practice of industry-wide bargaining. The author believes that labor is becoming a monopoly, and that employers who support industry-wide bargaining are helping to bring about this development. He examines the problem from the standpoint of one who deplores special privileges and monopoly powers wherever they exist.

Attitude Prediction in Labor Relations

By L. M. Libo. Stanford Graduate School of Business, Studies in Industrial Relations No. 10, 1948 (pamphlet).

What does labor think about the views of management? What does management think about the opinions of labor? This report gives the results of a questionnaire survey of the two groups. The same 24 questions were asked each group. Representing labor was the International Longshoremen's and Warehousemen's Union (CIO), and representing management was the California Personnel Management Association.

Profit Sharing for Workers

National Industrial Conference Board, Studies in Personnel Policy No. 97, 1948 (pamphlet).

The objectives of profit-sharing plans may vary from company to company. A plan may be designed to increase production, encourage savings, reward long service, or stabilize the wage structure. This study reports on the experience of 167 companies with active profit-sharing plans, and 35 who discontinued their plans.

Determining Salesman's Base Pay— A Role of Job Evaluation

National Industrial Conference Board, Studies in Personnel Policy No. 98, 1948 (pamphlet).

Many companies have excluded sales jobs from their job evaluation programs, feeling that selling positions do not fall into any formal pattern. This study describes the methods used in eight companies to evaluate their sales positions. Both the point-rating and factor comparison methods are described, as well as an additional plan which was developed especially for evaluating selling jobs.

WESTERNERS AT WORK...

Arizona

W. P. Goss of Magma Mining Company, Superior, appointed to succeed **Ed Dentzer** as member Arizona Copper Tariff Board. Dentzer recently retired as an official of Magma. Other new board member is **Richard D. Searles,** president Salt River Valley Water Users Association. Reappointed were **Sam H. Morris,** Globe, chairman, **C. R. Kuzell,** Douglas, and **Mark Gammill,** Prescott, all copper mining people.

George H. Groh, since 1945 chief engineer and general superintendent, and **John T. Kimball,** since 1947 assistant to the president, elected vice-president of operations and vice-president, respectively, of Central Arizona Light and Power Company.

California

Aircraft

Capt. Leland D. Webb, USN ret., Western regional manager Aircraft Industries Association, becomes acting general manager as of February 1, with offices in Washington. **J. M. Richards,** his assistant, will be in charge of Western regional office in Hollywood.

Carl F. Schmidt named airline operations engineer Lockheed Aircraft.

Food

P. J. McKenney relinquishes presidency of Globe Mills Division, Pillsbury Mills, Inc., to fill vacancy on Pillsbury executive-management committee. **B. J. Grear,** assistant president Globe Mills, moves up to fill McKenney's old spot. Both continue to maintain headquarters in Los Angeles.

Wilbur B. Cox becomes manager Kings County Packing Co. (San Francisco and Armona), when **Wallace Knox** of Oakland purchases stock interest of **Alex Plummer,** who has been active manager many years and president for last decade.

Paul Young, v.p. and general mgr. Golden State Company, Ltd., San Francisco, becomes president on retirement of **Frank E. Buck.**

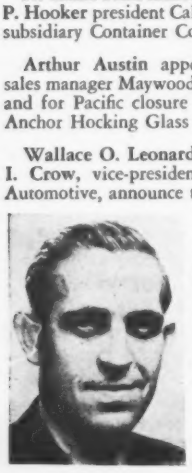
Arthur G. Caldwell, long-time export sales manager Food Machinery Corporation, retires and becomes director of newly established food machinery division of Frazar & Hansen, Ltd., San Francisco export-import firm.

Manufacturing

N. Chase Flint named chairman and **William P. Hooker** president California Container Corp., subsidiary Container Corp. of America.

Arthur Austin appointed assistant general sales manager Maywood Glass Co., Los Angeles, and for Pacific closure division of parent firm, Anchor Hocking Glass Corp.

Wallace O. Leonard, president, and **Harold I. Crow,** vice-president in charge, of Pacific Automotive, announce their resignations.



A. L. Hawley, formerly assistant works manager of the Plomb Tool Company, Los Angeles, upped to works manager. Mr. **Hawley** joined the company in 1936, serving as assistant factory superintendent, superintendent of time study, chief engineer, and assistant works manager.

William G. Davis, Jr., chosen by Columbia Steel for superintendent of production planning at Pittsburg mill, succeeding **Robert E. Williams,** who returns to San Francisco headquarters to become director of production planning. **Gordon White** becomes assistant superintendent of production planning under Davis.

J. T. Deane comes to Oronite Chemical Company as vice-president from California Oil Company's plant at Oak Point, La., where he was v.p. and mgr. in charge of manufacturing of lubricating oil additives.

Val Lobanoff

Val Lobanoff appointed assistant chief engineer, United Centrifugal Pumps, division of United Iron Works, Oakland. Formerly mechanical engineer and assistant chief engineer for Byron Jackson Pump Co. Has specialized in refinery and high-pressure boiler feed pump design.

Wallace A. Marsh

Wallace A. Marsh, formerly asst. to **Carl Olson,** v.p. Permanente Cement Co., appointed general manager of company and its subsidiaries. In two other of Henry J. Kaiser's companies, **Claude E. Harper** moves up from asst. gen. mgr. Standard Gypsum to gen. mgr., and **R. S. Barneyback** gets similar promotion in sand and gravel division of Henry J. Kaiser Co.

Verne W. Boget

Verne W. Boget, manager architectural and building products division, Gladding, McBean and Co., promoted to vice-president. Is a director of Materials Engineering Corp. of America and currently West Coast representative, advisory committee, Tile Council of America.

Engineering

Dr. Cledo Brunetti, former chief of engineering electronics section, U. S. Bureau of Standards, joins staff of Stanford Research Institute as associate director. Played leading part in development radar-guided bomb and radio-proximity fuse, two-way wrist radio, etc.

Robert Matteson, head of California Research Corporation's analytical laboratory at Richmond, named chairman San Francisco Engineering Council, composed of 11 major engineering and technical societies.

A. Tacchella, long time in charge of West Coast operations for Busch Sulzer Company, joins Engineering Controls, Inc., as project engineer at Los Angeles.

H. C. McClellan, president Old Colony Paint & Chemical Co., elected president Merchants & Manufacturers Association, Los Angeles.

Fred W. Mill steps up to division controller, The National Supply Co., at Torrance, succeeding **A. E. Witt,** retired. Started with the Torrance plant as timekeeper, has been asst. div. controller since '44.

Harry E. Squire becomes chief harbor engineer for the Port of San Francisco, and **Sidney Gorman,** principal civilian engineer in the public works department of Hunters Point naval shipyard, steps into his old shoes as assistant chief harbor engineer.

Warren L. Nahm, pioneer in Western plastics industry, retires as superintendent Remler Company, Ltd., San Francisco. New set-up makes **A. R. Ogilvie** plant manager, **H. Norman Eierman** sales manager plastics products, and **Wayne M. Becker** superintendent plastics production.

John S. Hawley, manager California Wire Cloth Corporation, Colorado Fuel & Iron subsidiary, upped to assistant to **Alwin F. Franz,** CF&I v.p. in charge of operations for CF&I and subsidiaries. Headquarters in Buffalo.

Industrial Relations

C. R. McMillin elected assistant vice-president in charge of industrial relations, Standard Oil Company of California.

International Longshoremen and Warehousemen's Association jointly agree on **Sam Kagel** as Pacific Coast arbitrator for new long-term waterfront agreement. Also will act as area arbitrator for northern California. Other area arbitrators to be appointed later.

James L. Mayer appointed director industrial relations Douglas Aircraft, succeeding **Fred C. Fischer,** now with Macy's, New York.

A. D. McCallum appointed resident manager of the North Fork operations of the Associated Lumber & Box Co. He was promoted from the position of logging superintendent.

A. L. Brosio, assistant general manager of National Iron Works, elected vice-president and director.

E. E. Lempp chosen as assistant manager of Building Utilities in General Petroleum's Los Angeles home office. **R. S. Hartman,** superintendent of transportation at General Petroleum's Taft plant, promoted to general superintendent of transportation unit at Vernon headquarters.

Louis C. Ball appointed geologist of the Standard Gypsum Co., Oakland.

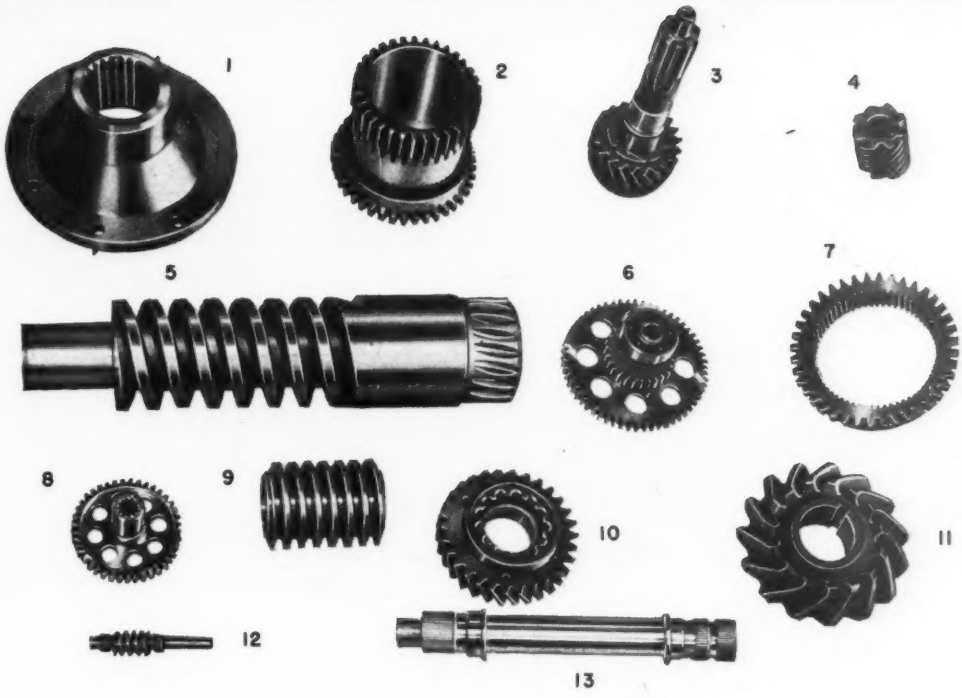
R. C. Ehrman, formerly supervisor of personnel and labor relations at General Electric Co.'s Oakland Apparatus Department, named industrial relations and quality control supervisor of the company's Oakland Lamp Works.

Miscellaneous

George Bowersox, general sales manager Arrowhead and Puritas Waters, Inc., and previously with Southern California Gas Company, fills newly created position with Coast Counties Gas and Electric Company as assistant regional manager, Contra Costa region.

R. H. Oakley, formerly Pacific Coast auditor for Glidden Paint Co., appointed assistant credit manager in home office, Cleveland.

(Continued on page 72)



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(Continued from page 70)

Colorado

E. F. Battson, New York vice-president Continental Oil Company, becomes v.p. and gen. mgr. of Continental operations in Rocky Mountain area, succeeding **W. H. Ferguson,** executive vice-president in Denver, retired. **L. L. Aitken,** executive assistant to Ferguson, promoted to assistant manager of Rocky Mountain area operations.

Ray D. Kelly, superintendent of engineering development at United Air Lines Denver operating base, moves up to superintendent of technical development. **F. F. Davis,** formerly superintendent of engineering planning, made engineering and maintenance assistant to **J. A. Herlihy,** vice-president in charge of operations. Davis will be aided by **G. H. Estill,** heretofore assistant to the general manager of engineering and maintenance.

Idaho

Stanley A. Easton, president Bunker Hill & Sullivan Mining and Concentrating Company, Kellogg, receives W. L. Saunders medal for 1949 from American Institute of Mining and Metallurgical Engineers, in recognition of his leadership for 50 years of this top-flight lead and silver mining enterprise.

Oregon

Leo Beckstrom of Western Pine Association inspection staff moves to Washington, D. C., to become field representative middle Atlantic area.

Staff changes in associated companies of Willamette Valley Lumber Co.: **Melvin G. Cutler** succeeds **Alfred C. Cevert,** resigned, as plant manager Willamette National Lumber Co., at Foster; **Harvey N. Hawkins,** formerly on Oregon Pulp & Paper Co. staff at Silverton, moves into Cutler's old place as plant manager Corvallis Lumber Co., Corvallis.

Capt. Homer T. Shaver chosen chairman Portland Commission of Public Docks.

Robert H. Noves, vice-president Oregon Pulp & Paper Company and Row River Lumber Company, and president Bridal Veil Lumber Company, elected president Oregon Pulp & Paper, vice **Fred H. Leadbetter,** deceased.

John H. Fossum named general manager of the new Ontario Wood Products Co., Ontario. Fossum was formerly Stoddard Lumber Co.'s manager at Baker.

E. W. Holmes, now vice-president and general manager of Douglas Timber Corp., Drain, was formerly resident manager of Siuslaw Forest Products, Mapleton. Mr. Holmes and two other principals have purchased the controlling interest of Douglas Timber from **E. S. Canton.**

Utah

Kennecott Copper Corp., Utah division, changes: **D. D. Moffat,** vice-president and general manager Utah division, and **J. D. Shilling,** assistant general manager, retire. **John C. Kinnear,** in charge of Kennecott operations in Nevada, Arizona and New Mexico, succeeds Moffat as vice-president in charge of Utah div.

Louis Buchman becomes general manager Utah Copper division and **E. W. Englemann** assistant general manager.

B. W. Hanson moves into new job as manager of industrial development for Union Pacific Railroad for Utah, Idaho, Colorado, Wyoming and Montana.

Roy Hatch, formerly labor relations director of Kennecott Copper Corp., becomes assistant to the general manager with jurisdiction over all employee and public relations. **L. F. Pett,** assistant mine superintendent, advanced to mine superintendent. **J. C. Landenberger, Jr.,** Kennecott's general hill foreman, replaces Roy Hatch as director of labor relations.

E. H. Owen elected secretary-treasurer American Gilsonite Co. Retains similar positions in Salt Lake Refining Co. and Salt Lake Pipe Line Co.

Arch G. Kirkland, assistant to the manager of mines for U. S. Smelting, Refining and Mining Co.'s Western operations since 1947, now becomes assistant manager of mines.

William M. Ward advanced to superintendent, blast furnace department, Iron plant of Geneva Steel Co.

Eugene O. Humphrey succeeds **E. A. Vail** as chief engineer of the Bamberger Railroad. Former has been engineer in charge of maintenance of way; latter becomes engineering consultant for Bamberger.

Frank V. Nelson fills newly created post of research director, Utah Manufacturers Assn.

J. B. Harshamn, general manager Stanolind Pipeline Co., switches to general manager, pipeline department, Utah Oil Refining Co.

Washington

James D. McCann takes over as vice-president and general manager Northwest Door Company, Tacoma. Formerly vice-pres. and gen. mgr. Kosmos Timber Co. and agen. mgr. Siuslaw Forest Products, Inc., of Mapleton, Oregon, U. S. Plywood subsidiaries.

Victor Olson, formerly pres. Bellingham Plywood Corporation, recently merged with Washington Veneer Company, elected president latter concern. **Arthur Olson,** ex-assistant manager at Bellingham, succeeds Victor Olson there. **Gus N. Arneson** continues to manage Springfield operation.

M. E. Bealey, superintendent of safety operations for West Coast Fast Freight, Portland, moves to Seattle to become general manager System Tank Lines, Inc., of which West Coast is an affiliate.

Paul M. Smith, secretary of Wheeler, Osgood Company, Tacoma, moves to Myrtle Creek, Oregon, to replace **Clark C. Van Fleet** (resigned), as general manager Fir Manufacturing Company, an Osgood Wheeler subsidiary. **Adolph Paul** leaves Springfield Plywood Corp. to be general superintendent for Fir, succeeding **Carl Jacobson,** who has gone into business for himself.

George R. Prout takes over at Hanford Engineer Works as general manager G-E's nucleonics department, succeeding **R. C. Muir,** who is now consultant to the department at Schenectady. Both men are vice-presidents of G-E.

A. L. Raught, Jr., assistant manager of Weyerhaeuser Timber Co. at Tacoma since 1939, retires.

Wyoming

Stanolind Oil Company chooses **C. W. Ward** for superintendent new Elk Basin plant. **M. W. Bretz** promoted to superintendent Salt Creek plant from plant engineer, succeeding **E. R. Wagner,** transferred to Texas.

John F. Cullen, division manager for Stanolind Oil & Gas Company at Casper, appointed division consultant. His old place taken by **Carl L. Larson,** division exploration superintendent at Casper, and **William B. McCabe,** division geologist, steps into Larson's shoes.

A. F. Barrett becomes manager of Rocky Mountain operations for General Petroleum Corporation, on retirement of **S. W. Hardison. H. R. Alfson** becomes gas engineer for Wyoming operations, **R. D. Townsend** manager of Rocky Mountain land contract bureau, and **S. J. Tryon** land agent.

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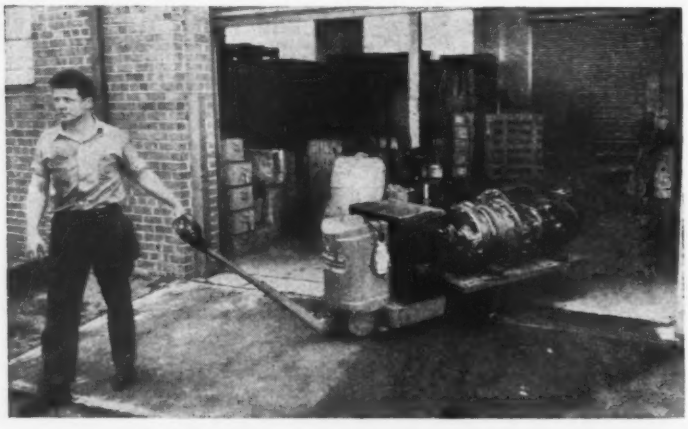

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Western Oil and Gas Association: president, **Reese H. Taylor** (president, Union Oil Company of California); first v.p., **William Reinhardt** (v.p. Union Pacific Railroad); second v.p., **William F. Humphrey** (pres. Tide Water Associated Oil Co.); treasurer, **L. K. Whittier** (v.p. Belridge Oil Co.); executive secretary, **John M. Peirce**; secretary, **D. S. Kilgour.**

Utah Mining Association: president, **W. H. H. Cranmer** (v.p. and gen. mgr. New Park Mining Co.); first v.p., **A. G. McKenzie**; second v.p., **Paul H. Hunt** (v.p. and gen. mgr. Park-Utah Consolidated Mining Co.); third v.p., **W. C. Page** (asst. to the pres., U. S. Smelting, Refining and Mining Co.); secretary-manager, **James K. Richardson.**

California Redwood Association: president, **Otis R. Johnson** (pres. Union Lumber Company); vice-pres., **Fentress Hill** (pres. Northern Redwood Lumber Company); secretary-treasurer, **Selwyn J. Sharp.**

Electro-Chemical Society, San Francisco Bay Section: chairman, **Howard B. Richman** (supt. cell and brine dept., Dow Chemical Co., Pittsburg); secretary-treasurer, **Richard F. Bechtold** (asst. supt. Dow Chemical); membership chairman, **George B. Scheer** (Kaiser Engineers, Inc.)

Electro-Chemical Society, Pacific Northwest section: chairman, **E. C. Gilbert**; secretary-treasurer, **Joseph Schulein** (both of Oregon State College, Corvallis).

Forest Products Research Society, Northern California section: chairman, **Theodore C. Combs** (resident mgr., Timber Structures, Inc.); secretary-treasurer, **R. E. Partch** (vice-pres., California Cedar Products Co., Stockton).

American Marketing Association, Northern California chapter: president, **Rodger I. Mendes** (Pacific Gas & Electric Co.); vice-presidents, **Lewis W. Forman** (Stanford Research Institute), **Raynor Jonason** (Shell Oil Company); secretary, **Ralph G. Cahn** (Ralph G. Cahn Advertising Agency); treasurer, **John Louth** (McKinsey & Company).

Capt. W. L. Gore, USMC, director of government relations for Aerojet Engineering Corporation, Azusa, new president American Rocket Society.

Southern California Chemical Market Research Group: chairman, **A. deRopp, Jr.,** (American Potash & Chemical Corp., Los Angeles); secretary, **George M. Cunningham,** (Nopco Chemical Co.)

Montana Coal Operators Association: president, **S. H. Clarke,** of Roundup; vice-president, **W. A. Romek,** of Red Lodge; secretary-treasurer, **D. F. Buckingham,** of Billings; assistant secretary, **Mrs. Kay Penman,** Billings.

Portland, Oregon, Raw Materials Survey: president, **General Thomas M. Robbins,** ret.; vice-president and treasurer, **Frederick Greenwood** (Bank of California); secretary, **Chester K. Sterrett** (Portland C of C); managing engineer, **A. O. Bartell.**

Port of Astoria (Ore.) commission: president, **George E. Gray** (Seaside); treasurer, **C. W. Laughlin** (Astoria); secretary, **W. F. McGregor** (Astoria); asst. secretary, **J. R. Bowler** (Astoria port manager).

Distributors Association of Seattle Board of Trustees: president, **Clyde Summerville** (Seattle Steel Co.); vice-president, **Roger Jones** (Lang & Co.); treasurer, **Frank Cady** (Crescent Mfg. Co.); secretary-treasurer, **Dean Ballard** (Distributors Assn.)

Stained Shingle & Shake Assn: president, **E. L. Connor** (Colonial Cedar Co.); vice-president, **John Martin** (Perma Products Co.)

Utah Canners Association: **R. A. Moss** of Bountiful, president; **D. J. Isom,** Salt Lake City, vice-president. **Harvey F. Cahill** reelected secretary-treasurer.

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ARIZONA

TENNESSEE MINING PRODUCTION HALTED—Tennessee Schuylkill Corporation, operators of the Tennessee Mine in Chloride, announce temporary halt in their production of lead and zinc. High level wartime production has depleted their reserves, and they have suspended production operations for a few weeks until engineering developments now in process are completed. Estimates show that a possible 300,000 to 400,000 tons of ore will result from present plans.

GILA BEND, AJO PROPERTIES SOLD—Arizona Corporation Commission has approved the sale of two state utility properties. One is Arizona Edison's Gila Bend electric light plant and distribution system to Central Arizona Light and Power Co., at $195,178, including Arizona Edison's franchise. The other is the Gibson Water Co. and the Southern Utility System and Supply Co. of Ajo, involving $37,000.

CALIFORNIA

BETHLEHEM AWARDED CONTRACT — San Francisco yard of Bethlehem Steel Company has a contract from Tide Water Associated Oil Company to cut an AOG type tanker in two, lengthen her by 30 feet to increase barrel capacity, and otherwise to convert her to a commercial tanker, T. C. Ingersoll, manager, announces. The work is expected to be completed in 65 calendar days. The tanker will be renamed M/S Tycol.

CONSOLIDATED AWARDED FURNACE JOB—Consolidated Western Steel Corp., a United States Steel subsidiary, has been awarded the fabrication and erection of the new blast furnace at Fontana by the Kaiser Company, Inc., Oakland. The new furnace will have a rated capacity of 1,200 tons of pig iron and appurtenant facilities necessary to produce steel plate. It will be completed in 1949, and is almost identical with the present blast furnace of similar capacity also fabricated and erected by Consolidated Steel in 1942. Consolidated will begin fabrication at its Maywood plant of large diameter welded steel pipe to be used in the 1,840-mile pipeline system to be constructed by Transcontinental Gas Pipeline Corporation from Texas to New York City.

FOOD PRODUCTS CO. PURCHASED—Stockton Food Products Co., Stockton, has changed hands to Don B. Wood for a reported $400,000 to $500,000. Mr. Wood, a founder of Foster & Wood Canning Co., Lodi, which was later purchased by Stokely Foods Co., Oakland, acquired plant and equipment only in the deal.

ASPHALT MERGER—Standard Oil Company of California announces consolidation of its Western asphalt business and that of its subsidiaries. Expanded operations will be carried on by the new company, "Stancal Asphalt & Bitumuls Co.," with home office at 200 Bush St., S. F., under C. W. Stewart, president, and N. H. Angell, vice-president in charge of sales. Stancal is composed of former California Asphalt Corp., with refinery in Portland, Oregon; the Asphalt Division of the Standard Oil of California; and the Western portion of the American Bitumuls Co., with plants at Oakland and Los Angeles, Calif., and Tucson, Ariz.

REVERE COPPER ON WEST COAST—Revere Copper & Brass, Inc., announce formation of their Pacific Coast Division with headquarters at the company's mill in Los Angeles, according to C. Donald Dallas, chairman. Wallace H. Hitchcock has been named manager of the new division, which includes Revere's district sales offices in San Francisco and Seattle.

PLUMBING FIXTURE MANUFACTURERS MERGE — Universal Sanitary Manufacturing Co. of New Castle, Pa., with divisions at Redlands, Calif., and Camden, N. J., and the Rundle Manufacturing Co. of Milwaukee, Wis., with a plant also at Camden, N. J., have merged into the Universal-Rundle Corporation, according to W. Keith McAfee, board chairman of the new corporation. This combine, which employs 270 at the Redlands plant, is one of the largest manufacturers in the country of enameled cast iron and porcelain kitchen and bathroom fixtures.

PEERLESS PUMP ADDS—Peerless Pump Division (Los Angeles) of Food Machinery Corp. has completed a 35,000 sq. ft. increase in manufacturing space and 8,000 sq. ft. in office space. Peerless manufactures fuel oil, gasoline, mine pumps, etc.

MORE METAL CASKETS—Shannon & Simpson Casket Co., Alhambra, is constructing a 15,000 sq. ft. addition for manufacture of metal caskets.

RECORDS REPLACE RADIO—Capitol Records, Inc., has acquired the 24,000 sq. ft. formerly occupied by Don Lee radio station. Capitol's repertoire, engineering department and manufacturing activities will be carried on at the 1507 Vine St. address in Los Angeles.

CRANE HOIST BUILDS—Crane Hoist Engineering Co. has constructed a 10,500 sq. ft. building in Los Angeles for the production of hand and electric traveling cranes from one to 10 tons, and 20 tons .

PIPELINE REQUEST—Southern Counties Gas Co. has requested Federal Power Commission authority to construct a 16-inch natural gas line 35 miles in Riverside County. Estimated cost is $1,931,700. This is to be part of an 85-mile line, connecting the Texas-to-California pipe line near Moreno and extending to San Diego.

RYAN GETS CONTRACT—Ryan Aeronautical Corp. is in receipt of a $1,500,000 order from Boeing Aircraft Co., which order practically doubles Ryan's contract figure with Boeing. This order is a result of Boeing's recent award by the Air Force of an order for 23 Stratofreighter C-97's to replace older planes on the Berlin air-lift run.

C-47's REMOVED FROM MOTHBALLS—Aviation Maintenance Corporation of Van Nuys has been awarded a $940,000 contract to recondition 47 Douglas C-47 planes in storage at Tucson, Arizona. Planes will be removed from storage and flown to Metropolitan Airport, where the reconditioning will be done.

NEW OIL FIELD OPENED—Hancock Oil Company announces development of the first well in an entirely new field 30 miles south of Bakersfield. The well is producing 500 barrels of 32 gravity oil and began flowing at 7,430 feet.

$750,000 PLANT OCCUPIED—Pacific Valves, Inc., is now occupying new headquarters at 3201 Walnut Ave., Long Beach. The new plant represents an investment of more than $750,000.

$11,000,000 PORT DEVELOPMENT—Los Angeles harbor currently has $11,000,000 worth of new construction either planned or under way, according to Arthur Eldridge, general manager of the Port of Los Angeles. Projects include a $4,300,000 passenger and cargo terminal; a $1,500,000 wharf and transit shed; a $1,250,000 wharf to provide berthing space for fishing vessels; fish markets and wharf to cost $600,000, and a marine passenger and freight terminal, $3,300,000.

UTILITY TELLS EXPANSION—Capital improvements costing $1,000,000 a month are being made by San Diego Gas & Electric Company and the firm will have to continue with the program for years to come, L. M. Klauber, company president, reports.

NEW SAN DIEGO CORPORATION—Organization of National Tuna Clippers, Inc., to secure partial ownership in tuna fishing vessels, is announced. The new corporation has been organized as a subsidiary of the National Iron Works, San Diego, and will have authorized capital of $1,000,000 of common stock and $1,000,000 of 6 per cent preferred stock.

RUBBER PLANT SITE SOUGHT—United States Rubber Company officials recently looked over a number of locations in the San Francisco Bay area for establishment of a $1,000,000 mechanical rubber plant which would create 900 new jobs. Herbert E. Smith, president of U. S. Rubber and a former San Franciscan, said selection of the site will depend primarily on the availability of labor and water and transportation.

$715,000 AIRPORT EXPANSION—An expansion program at Oakland Municipal Airport to cost $715,000 will be launched during 1949, according to announcement by Claire V. Goodwin, president of the Oakland Board of Port Commissioners. The federal government will provide $385,000 and the board $327,000. The program is designed to keep Oakland airport among the leading airports of the nation. Major work involves expansion of the airport terminal building with construction of a second story and annex to triple present floor space to approximately 32,000 square feet.

FREIGHT TERMINAL PLANNED—West Coast Fast Freight Company plans a $58,000 one-story freight terminal and an office building on Port of Oakland property. The company, which is subleasing property from Southern California Freight Lines, provides service to Portland and Seattle.

NORTH AMERICAN CONTRACTS—North American Aviation, Inc., Downey, Calif., has been awarded contracts for 20 reconditioned AT-6 trainers for the Venezuela air force and three for the Philippine air force. The plant is currently at work on 30 AT-6's for Argentina and 42 for Siam.

JIGS NEARLY COMPLETE—Production jigs for the three-wheel automobile to be produced by the Davis Motor Car Company at Van Nuys, Calif., are expected to be completed in January and line production started. Output is expected to be one to two cars daily at first and will be speeded up to meet the company's goal of 50 a day. A. W. Hall is plant manager.

MILK PLANT EXPANDING — Golden State Company's Oakland market milk plant is undergoing a $65,000 expansion and modernization program which will add 6,000 sq. ft. of space, A. E. Schwatka, East Bay manager, announces. Automatic conveyor belts for handling containers between trucks and storage rooms have been added to cut production costs and new bottling machines have been installed to double capacity for bottling fluid milk.

SOUTHERN CALIFORNIA: NEW INDUSTRIES — Twenty new manufacturing units were recently established in Los Angeles County at an investment of $2,443,000 and were: **Alhambra area**—Junior Tool Co., 5670 Alhambra Ave.; small electric bench grinders; W. N. Baldwin, president. **Burbank**—Frost Industrial Electric Co., 2430 N. Ontario St.; heat elements for residential and industrial use; W. A. Frost, owner. **El Monte**—Branson Sash & Door Co., 131 W. Schmidt Rd.; sash, doors and allied products; J. R. Branson, president. **Glendale area**—Wespac Products, Inc., 5430 San Fernando Rd., W.; residential insulation; Guy Retzlaff, president. **Inglewood area**—Bienenfeld Enterprises, Inc., 9624 Bellanca St.; mirrors. **Los Angeles**—C-Thru Aluminum Awning Co., 1100 S. Hope St.; aluminum awnings. Hershey Co., 2650 N. Figueroa; fountain syrups and concentrates; A. L. Hershey, president. Miracle Grater Co., 121 S. Los Angeles St.; stainless steel graters. Shore Metal Products Co., 2881 E. Pico Blvd.; metal stampings. Soil Chemical Products Corp., 3818 Bandini Blvd.; liquid fertilizer; subsidiary of Parco, Inc. Blasto Spray Gun Mfg. Co., 7007 Haas Ave.; assembly and packaging of sandblasting and flocking guns; W. E. Porter, owner. Larsen-Hogue Electric Co., 11510 S. Alameda St.; rewinding of electric motors and repair work. Utility Control Co., 832 E. 108th St.; thermostats; plans manufacture of thermostat valves. Utility Regulator Co., 810 E. 108th St.; high-pressure regulators. Arco Wood Products, 8808 Horner St.; headboards and cornices. Roger-Scott Co., 8946 National Blvd.; plastic welding equipment; Roger J. Dieudonne, president. **Pasadena**—Mission Electric Mfg. Co., 132 W. Colorado St.; fractional horsepower motors; John O. McReynolds, president. **Santa Monica**—The Rand Corp., 1500 Fourth St.; scientific research, development and engineering; F. R. Collbohn, director. Nicholas H. Wade, Inc., 2000 Colorado St.; cabinet making, paneling, etc.; plant moved from Cleveland, Ohio. **Vernon area**—Pelton Water Wheel Co., 2447 E. 54th St.; branch of San Francisco firm, subsidiary of Baldwin Locomotive Works; water wheels, electric turbines, hydraulic machinery; W. E. Christison, superintendent.

SOUTHERN CALIFORNIA: EXPANSIONS—Thirty expansion projects in Los Angeles County recently represented $2,882,000 additional investment and were as follows: **Burbank**—Burbank Motor Parts Co., 337 S. San Fernando Blvd.; to move soon to 7,000 sq. ft. building at 108 E. Palm Ave.; motor parts machining. **Culver City area**—Monarch Record Mfg. Co., 4852 W. Jefferson Blvd.; more space at this address; phonograph records. **Glendale**—Glendale News-Press, 111 N. Isabel St.; moved to new plant with 35,000 square feet of floor space. **Hollywood**—Wm. R. Whittaker Co., 915 N. Citrus Ave.; added 5,000 sq. ft. aircraft valves, snapshot cameras, etc. **Huntington Park**—Aircraft Foundry Co., 5316 Pacific Blvd.; added 4,000 sq. ft.; wood, metal patterns, aluminum sand castings, brass and bronze castings. **Inglewood**—Air Products, Inc., 316 E. Beech St.; increased machine shop space. **Los Angeles**—Edward Apffel Coffee Co., 2115 S. Grand Ave.; will add 6,500 sq. ft.; coffee processing. Donig of California, 931 E. Pico Blvd.; 12,000 sq. ft. available at new address; blouses, skirts, jackets, dresses, etc. Fairbanks-Morse & Co., 2401 Santa Fe Ave.; plans 30,000 sq. ft. office-warehouse, 4600 S. Soto St.; manufacturing pumps. Foam-O Chemical Co., 1615 E. 24th St.; new location; detergents. Price-Pfister Mfg. Co., 3011 Humboldt St.; adding 6,000 sq. ft.; plumbers' brass goods. Southwestern Portland Cement Co., 727 W. 7th St.; plans two-story, 10,000 sq. ft. building at 1032 Wilshire Blvd. Studio Shoes of California, 4200 Avalon Blvd.; opened 7,500 sq. ft. plant at 1150 E. Pico Blvd. for Catalina Footwear; women's shoes. Taxco Recording Co., 3128 S. Main St.; added space; phonograph records. Curry Mfg. Co., 4504 E. Washington Blvd.; occupying new plant of 6,000 sq. ft.; battery parts. Neilson Chemical Co., 3411 Union Pacific Ave.; larger facilities in new building; branch of Detroit firm; rust removers. Anderson & Wagner, Inc., 8701 Mettler St.; plans 15,000 sq. ft. addition; soda fountain, bar, restaurant equipment. Appling & Richards Mfg. Co., 928 E. 108th St.; in new plant of 10,000 sq. ft.; floor lamps. Lane-Wells Co., 5610 S. Soto St.; will add about 16,000 sq. ft.; gun-perforating equipment, supplies, other oil well equipment. Mansion House Furniture Co., 6001 S. Gramercy Pl.; acquired 2,500 sq. ft. warehouse; occasional tables. T-Die Cast & Molded Products, 11630 S. Main St.; erecting 9,000 sq. ft. plant at 11627 S. Main St. United Steel Products Corp., 5311 Avalon Blvd.; adding four rolling mills for steel and aluminum products. Utility Cabinet Co., 5856 S. Avalon Blvd.; erecting 10,000 sq. ft. mill at 6924 Stanford Ave.; redwood garden and den furniture. Flexible Sewer Rod Equipment Co., 9059 Venice Blvd.; added 6,000 sq. ft.; sewer and water main cleaning, drain tools, plumbers' tools. **Lynwood**—Silkauf Products of California, 2851 Lynwood Rd.; acquired 1½ acres and 8,000 sq. ft. building; plastic, wood bathroom accessories. **Manhattan Beach**—Heirlooms of Tomorrow, 2809 N. Sepulveda Blvd.; erecting 10.000 sq. ft. plant in 3600 block on Aviation Blvd.; ceramics. **North Hollywood**—Karseal Corp., 1156 N. Highland Ave., Hollywood; has constructed 6,000 sq. ft. plant at 11552 Hart St.; automotive

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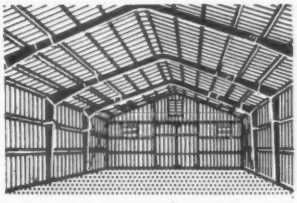

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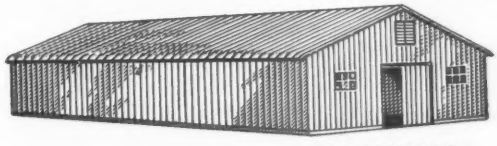

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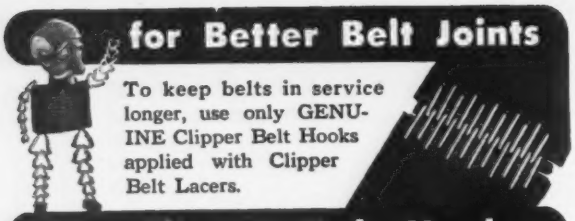

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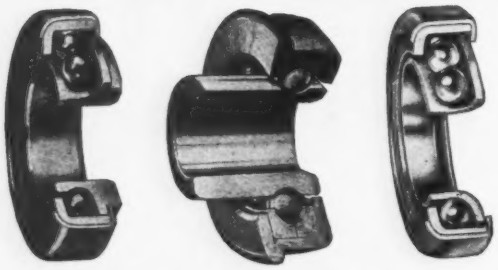

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chemicals. Paddock Engineering Co., 8400 Santa Monica Blvd., Los Angeles; opened 4,000 sq. ft. plant at 6936 Lankershim Blvd.; swimming pool equipment. Ray Industries, 5333 Cahuenga Blvd.; plans 3,000 sq. ft. addition; special packaging machinery, aircraft parts and assemblies. Van Nuys—Marquardt Aircraft Co., 4221 Lincoln Blvd., Venice, subsidiary of General Tire & Rubber Co.; acquired former Timm Aircraft Corp. property, adjoining Metropolitan Airport. Vernon area—Bender Machine & Engine Co., 2059 E. 37th St.; added space in new building; internal and external grinding, metal spraying, engine and compressor rebuilding. Hollobilt Co., 2035 Bay St., formerly Eugene Extruded Metals Co.; constructing 50,000 sq. ft. building at 2724 Leonis Blvd.; affiliate of Southern California Glass Co.; shower and tub enclosures, store fronts, patio enclosures. Model Die Casting Co., 5710 Paloma St.; increased space; die and zinc alloy castings; mold work; railroad scale models.

San Antonio Winery, 727 Lamar St., erecting 6,000 sq. ft. addition, dry and sweet wines. Russell, Burdsall & Ward Bolt & Nut Co., 4466 Worth St., adding 12,000 sq. ft. building; screws, bolts, rivets, nuts, etc. Tapered Sheets, Inc., 3409 E. Olympic Blvd., 10,000 sq. ft., aircraft parts and machine work. Cut Down Wheel Service, 825 E. 60th St., opened additional plant of 16,000 sq. ft., 11215 S. Wilmington Ave.; wheel parts, fender skirts, etc. Falco Machine & Tool Co., 6218 S. Wilton Pl., in new plant; dies, tools, jigs, fixtures, special machinery, jig boring. Federal Envelope Co., 6833 Stanford Ave., erecting building for occupancy in near future. Glendale—Hollywood Water Heater Co., 4601 Brazil St., has 15,500 sq. ft.; automatic gas water heaters. Huntington Park—L & F Machine Co., 2110 Belgrave Ave., adding 10,000 sq. ft.; dies, tools, airplane parts. Northridge—Valley Carbon Paper Co., 18633 Parthenia St., moved from Santa Monica to new plant. Vernon area—Globe-Union, Inc., 5015 District Blvd., added 10,000 sq. ft. building, storage batteries. Paper Products, Inc., 4423 Fruitland Ave., now has 21,000 sq. ft.; shelf paper, gift wrappings, paper napkins.

PLANT UP FOR SALE—The government-owned aluminum reduction plant at Riverbank, Calif., has been put up for sale or lease by the Federal Works Agency, with sealed bids due before Jan. 12, 1949.

COLORADO

RAILROAD TO SPEND $17,000,000—Denver & Rio Grande Western expects to spend this amount for improvements and equipment in 1949. Equipment will account for about $11,000,000.

PUBLIC SERVICE CO. PLANS EXPANSION—A construction budget figure of $18,300,000 has been announced by the Public Service Co. of Colorado. This is the 1949 allotment of a $63,600,000 five-year program. Largest item in this year's program is work on the new Arapahoe plant in Denver, a 40,000 kw. unit which is to be put into operation in 1950.

MOLYBDENUM PRODUCTION FIGURES — Two and one-fourth million tons of ore were mined and milled by Climax Molybdenum Company during 1948, according to company officials.

TRIPLEX MOVES TO COLORADO—Triplex Corporation of America, manufacturers of pistons, is moving to Pueblo from East Chicago and bringing with it a $1,000,000 annual payroll and $2,500,000 of machinery and equipment. (See The Continental Divide Regional Review for details.)

SUGAR BRINGS $14,244,000—Holly Sugar Corporation will pay beet growers $14,244,000 in 12 factory areas for their 1948 crops, according to Merrill Shoup, executive vice-president. Areas covered include parts of Colorado, Montana, Wyoming, California, Nebraska, North Dakota and Utah.

IDAHO

NEW SANDPOINT PLANT — Pack River Lumber Co., Sandpoint, Idaho, will use wood waste, including the bark of the tree, in manufacturing sheeting, moulding and other building material, according to D. L. Haynes, chemical engineer. In laboratory experiments wood waste has been defiberized and with the use of resins has been transformed into sheeting board by subjecting it to tremendous pressure. The laboratory has also made a moulding product which is end-glued with new adhesives so that short and intermediate lengths can be put together into a continuous piece. The firm, of which James Brown, Jr., is owner, is building a pilot plant that will attempt to turn out the products developed in the laboratory.

RARE EARTHS IN IDAHO—Rare Earths Development Co., an outgrowth of Rare Earths, Inc., has been incorporated with 3,000,000 shares. This firm, with a 13-acre site at McCall, intends to offer 300,000 shares to the public to raise $300,000 to further process monazite sands. Recently a 40-ton car of monazite concentrate reported to be 95 per cent pure was shipped to Chicago, where newspapers called it the "first monazite shipment in the United States." One of the principal elements in monazite is thorium, which is valuable in atomic energy operations.

FERTILIZER FROM PHOSPHATE ORE—J. R. Simplot Co. of Pocatello, Idaho, has been given the right by the U. S. Dept. of Interior to develop low grade phosphate ore deposits on 1,124 acres of public land in Caribou county. This will be the first production of farm fertilizer from ores on Western public lands.

TIMBER TO MATCHES—$1,097,000 worth of saw timber and cedar poles were sold to Diamond Match Co. by the state of Idaho in the state's largest recorded timber sale. The timber lies on the Middle Fork of the East River, 15 miles north of the Priest River.

NEW LUMBER OPERATION—Downer & Harris Brothers, large-scale Idaho lumber operators, have disclosed plans for a projected $300,000 plant to be built at Gowen field. A planing mill, dry kiln, moulding plant, cut stock and drying yard are projected on the leased property. Request for the lease application has been forwarded to the airport commission.

MONTANA

ROUNDHOUSE MAY BE ENLARGED—Enlargement of the Harlowton, Mont., roundhouse to accommodate four-unit freight diesels is reportedly being considered by the Milwaukee railroad. The enlarged stalls would be used for inspection and servicing of diesels which reportedly may replace steam power out of Harlowton. Cost of the contemplated improvements may reach an estimated $1,000,000.

HIGH GRADE FLUORSPAR MINE—Coeur d'Alene Mines Extension Co. has started operating a fluorspar mine near Superior on a 10-year lease. This mine contains ore having only one per cent silica. Several cars of ore have been marketed, and the firm is arranging to construct a mill.

ACRES OF OIL—Conservative estimates have it that at least 1,000,000 acres of Montana are now leased to oil interests, with prospect of much action this year.

BOZEMAN TOOL FIRM—Articles of incorporation have been filed with the Secretary of State for Browning Tools, Inc., of Bozeman, capitalized at $200,000.

NEVADA

NEW INDUSTRY IN LAS VEGAS—George W. Prior Co. of Denver has leased the Rosenwald building in West Las Vegas, starting April 1, to manufacture overalls. About 65 local people will be employed in the plant.

NEVADA ASKS MORE POWER—The Colorado River Commission for Nevada has asked the Bureau of Reclamation for another generator at Boulder Dam to provide energy requirements of the Lincoln County Power District, Overton Power District and Southern Nevada Power Company. The power contractors would underwrite the cost. The commission also notified the bureau it will apply for a third of the power to be generated at the proposed Bridge, Glen and Marble Canyon dams on the Colorado for which funds will be sought in the next Congress.

OREGON

PACKING COMPANY SOLD—Columbia River Salmon Co., Inc., has been sold to Superior Packing Co. of Seattle and Tenakke, Alaska. No financial details were available in the report.

NAVY AWARDS MAINTENANCE CONTRACT—For consideration of some $750,000 the Wilamette Iron & Steel Co. has contracted for the repair and maintenance of 40 vessels in the Pacific reserve fleet, stationed at Tongue Point Naval base, Astoria.

REFORESTATION LAND PURCHASED—Longview Fiber Company has purchased approximately 377 acres of reforestation land in the Keasey-Veronia area of Columbia county, Oregon, for $111,558.

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S-28

THE WEST ON ITS WAY

NEW RADIO STATION—FCC approval of the new radio station KMCM at McMinnville has been received by the McMinnville Broadcasting Co. Construction is expected to start around the first of February.

P. P. & L. PLANS MILLION-DOLLAR CENTER—Pacific Power & Light Co. plans a new central power transmission and distribution substation in Portland, at an estimated $1,000,000. Scheduled completion will tie in with completion of P. P. & L.'s new 50,000 kw. generator at Merwin Dam on the Lewis River.

FERTILIZER PLANT RESUMES — Columbia Metals Corp.'s Salem fertilizer plant, largest in the Northwest, has resumed operations after being closed down for several months. The shutdown was caused by lack of storage space.

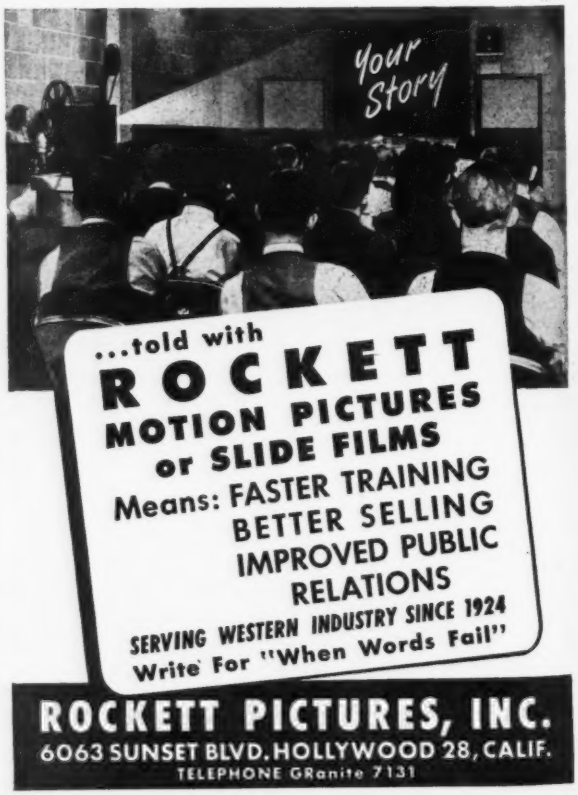
FLOUR MILL EXPANDS—Henry Freeman Mfg. Co., 3544 S.E. Milwaukie Ave., Portland, completes an $85,000 addition to plant and installation of new flour blending machines.

NEW PORTLAND PROJECT — Fisher-Cosart Corp., Portland, announces shop and storage building to cost, with equipment, $122,000.

FISHERIES FIRM ORGANIZED—Oregon Pacific Fisheries, Inc., has been organized with Graham Barbey as president, and will engage in Pacific Ocean fishing. Mr. Barbey, who made the announcement in Astoria recently, is associated with the Barbey Packing Company, headed by his father, Henry G. Barbey, which packs Columbia River salmon and tuna. The new firm is incorporated for $100,000.

PERLITE PLANT STARTED—Work on the main structure for the $1,000,000 development by Dant & Russell, Inc., to convert a glasslike substance called perlite into insulating material has been started at Frieda by Timber Structures, Inc., Portland. It is planned to have part of the main building in operation during January and in February machinery from the St. Helens plant will be moved to Frieda.

SISKIYOU MINE PROJECT—An access road costing $50,000 is being completed to the Siskiyou copper mine, 20 miles from Happy Camp, developed by Siskiyou Mines.



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PLANT UP FOR SALE—Bids for sale of a surplus synthetic ammonium sulphate plant at Salem, Ore., are invited by the War Assets Administration in Washington, D. C., and will be accepted until February 2. The $5,000,000 plant has an annual capacity of 70,000 to 75,000 tons. Columbia Metals Company of Seattle is operating the plant on a lease which expires July 1.

UTAH

PIPELINE OPERATION TRANSFERRED—Stanolind Pipe Line Co. of Tulsa has withdrawn as operating agent for Utah Oil Pipe Lines and pump stations in Utah, Wyoming, and Colorado, affecting about 800 miles of pipe line and 12 pump stations in the Rocky Mountain area. More than 200 Stanolind employees were transferred to the Utah company.

PARKS PACT REACHED—Union Pacific Railroad and the National Park Service announce agreement on new 20-year contracts for Utah park concessions. Union Pacific's subsidiary, Utah Parks Company, will continue operations at Zion and Bryce Canyon National Parks and the North Rim of Grand Canyon National Park and an agreement with the Forest Service provides for operations in Cedar Breaks National Monument. Estimates placed company investments between $2,500,000 and $5,000,000 with additional millions spent in advertising promotion.

WASHINGTON

GAS UTILITY SOLD—Twin Cities Gas Co., newly formed firm, has purchased the Western Gas Co. plant and distribution system in Longview and Kelso, at a reported figure "in excess of $50,000."

STRATOFREIGHTER ORDER AWARDED BOEING—An additional twenty-three C-97 Stratofreighters have been ordered from Boeing by the Air Force, at a cost of $39,422,000. These cargo planes will be replacements for worn out craft on the Berlin air lift.

LEAD FACTORY TO SEATTLE—Northwest Lead Co. has awarded a general contract for construction of a new factory to produce lead oxides. The plant, scheduled for completion early this year, will be the first in the Pacific Northwest to produce lead oxides for use in manufacturing batteries, paints, and in other trades. A large quantity of special equipment is to be installed. Total cost of the project was not reported.

MORE ROOM FOR ATOMIC WORKS—The Atomic Energy Commission has authorized purchase of 63,000 acres of land to establish permanent boundaries for the Hanford atomic works. Earlier this year the AEC authorized purchase of 105,000 acres in Benton county.

ELECTRO-CHEMICAL PLANT PLANNED—A multi-million dollar electro-chemical plant is planned at Vancouver by the Buffalo Electro-Chemical Co., of Buffalo, N. Y. The projected plant, which will be at least two years in construction, expects to employ about 150 persons.

SULPHURIC ACID PLANT GOING UP—American Smelting & Refining Co. at Ruston has been issued a building permit to erect a $300,000 sulphuric acid plant, according to Supt. Paul T. Benson, of the Ruston plant. The acid will be produced from sulfur dioxide, which is reclaimed from the smoke generated in the copper smelting process.

METAL BUILDERS EXPAND—Wright & MacDougall, builders of prefabricated aluminum buildings, are erecting a new building west of the Spokane city limits to double present facilities. The firm was founded a year ago and manufactures warehouses for farm, machine shop and other uses.

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THE WEST ON ITS WAY

• Ferroalloys plant on Columbia River, near Wenatchee, where Keokuk Electro-Metals will produce iron in electric arc furnaces.

PLYWOOD MERGER — Bellingham Plywood-Washington Veneer merger is announced by Owen R. Cheatham, president of Washington Veneer. The combine, now the largest producer of Douglas fir plywood in the country, has an annual capacity of approximately 275,000,000 square feet of plywood. Two plants are located in Olympia, one in Bellingham, and one in Springfield, Oregon.

WASHINGTON PACKERS SOLD—Washington Packers, Inc. (Dewkist Brand) has been sold to the Seattle First National Bank, according to the County Auditor's office in Tacoma, for an indicated price of $1,835,000. Payment was $220,000 cash and cancellation of two mortgages totaling $1,615,000.

GENERAL PETROLEUM EXPANDS—General Petroleum Corp. announces proposed construction of a $40,000 bulk oil plant to serve the Lewiston area, according to George R. Theissen, Lewiston wholesale agent.

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BOEING TO USE RENTON PLANT—Boeing Airplane Company will resume production in portions of the Renton, Wash., plant which has been idle since the war. Parts of the plant will be used for final assembly operations on C-97 Stratofreighters ordered by the Air Force. Boeing also reports that more than half the hundreds of millions of dollars allotted in Air Force orders will be diverted to subcontractors and suppliers. The company's working force was 22,000 and an additional 1,000 to 1,500 were expected to be added.

WYOMING

REFINERY SOLD—Carter Oil Co., an affiliate of Standard Oil of N. J., have sold their 2,000-barrel-a-day refinery at Castle, Wyoming, to the Consumers Cooperative Association.

SEABOARD OIL BUYS SILVER TIP FIELD—Julius C. Peters, head of the Resolute Oil Co., announces sale of his interests in the Silver Tip field to the Seaboard Oil Co. of New York. The $3,000,000 transaction involves from 3,000 to 4,000 acres in the field, just south of the Montana border. This sale does not involve the Resolute Co., Mr. Peters said.

POSSIBLE WYOMING PULP INDUSTRY—David S. Nordwall, supervisor of the Medicine Bow National forest, indicated that a new industry for the Laramie region may be possible, judging from the numerous inquiries concerning cutting timber on the forest for use in making pulp. He stated that this timber is highly satisfactory for making pulp used in commercial grades of paper.

NEW CHEYENNE CONTRACTORS — Incorporation papers for Gunite and Steel Construction, Inc., were filed recently by Frank J. McCue, William F. Benham, and Opal Benham. The new firm will operate as general engineers, in the construction and contracting business, with business office in Cheyenne.

REFINERY SOLD—Carter Oil Co. has sold a 2,000-barrel-a-day refinery at Newcastle to the Consumers Cooperative Refinery Association.

CARTER SELLS REFINERY—Carter Oil Company announces sale of the Lovell, Wyo., refinery to Husky Refining Co., Cody. The plant has a capacity of 2,000 barrels of crude oil daily and has been operated by Carter since 1944. T. R. Corbett of Carter Oil said other Carter refineries will take care of winter demands and that Carter's new 20,000-barrel-per-day plant at Billings will be completed in time to meet 1949 demands.

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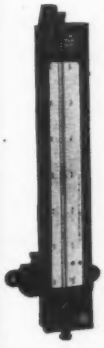
U-TYPE MANOMETERS

The Clean-Out Manometer (at left) for line pressures up to 100 lbs. per sq. in. A wing nut permits the Manometer body and tube to be disconnected from the head — the tube cleaned with a brush furnished or tube replaced, and the instrument reassembled without disconnecting the head section from the piping. Send for Bulletin No. 1.

The Model A-995 WM Manometer for line pressures up to 400 lbs. per sq. in. These instruments are built with heavy walled annealed straight Pyrex tubes, gland packed top and bottom in steel end blocks and clamped to the body at fixed intervals to prevent distortion. Catalog Sheet A-995 WM gives complete details.

WELL-TYPE MANOMETER



Model A-275 WM (at left) is a direct reading type for line pressures up to 150 lbs. per sq. in. Standard construction; ranges — from 6" to 24". Wall mounted type shown; also available in flush mounting. Ask for Catalog Sheet A-275 WM.

SIGHT FEED BUBBLER

This Sight Feed Bubbler with 2½" dia. bowl of Pyrex glass is good for line pressures up to 50 lbs. per sq. in.; of plastic, for pressures up to 100 lbs. Sturdily built with brass or semi-steel body. Supplied in ring type (shown) and strap type. Needle valve controls bubbler rate. Ask for Bulletin 21.

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THE WEST ON ITS WAY

SYNTHETIC LIQUID FUEL—U. S. Bureau of Mines is proposing a $21,000.000 synthetic fuels industry based on fuel oil derived from the vast shale deposits in the 16,500 square mile area of the Wyoming-Colorado-Utah Green River basin. The bureau estimates cost of extracting the oil at $2.30, and transportation via pipeline to the West Coast for as low as 33 cents a barrel. To the east coast it would run 60 to 70 cents per barrel. These deposits are reported to be valued at $700,000,000.

NEW GAS SOURCES SOUGHT—The Rocky Mountain Gas Company is negotiating to bring natural gas from the Church Buttes field in Sweetwater county to Laramie and Rawlins as one possible new source of supply. The pipeline would cost $1,000,000. The firm also has plans to drill four wildcat wells between Rawlins and Medicine Bow in new efforts to find new supplies. The utility recently asked the Wyoming Public Service Commission for permission to restrict industrial users of natural gas to protect domestic customers. Industrial users were being asked to convert to oil or coal.

UNION OIL EXPANSION—The exploration department of Union Oil Company of California is creating a Rocky Mountain Division headquarters at Laramie, Wyo., to handle expanded operations. Max L. Kreuger of Los Angeles, formerly chief geologist in the Rocky Mountain Division, will be manager of operations. E. P. Tallant, manager of production at Great Falls, Mont., will handle drilling and production at Laramie. Holdings of Union in Wyoming were recently increased by several hundred thousand acres in the Big Horn and Powder River basins. Several test exploratory wells are to be drilled.

MOVIE COMPANY ORGANIZED — Selection of Cheyenne as the location for a new motion picture company which plans to produce Western pictures is announced and negotiations are under way to obtain facilities for the enterprise. The company, Kinego Rand Enterprises, is seeking to lease hangar space at the Cheyenne airport, but if the property cannot be obtained will lease or build other facilities. Announcement of the project was made by Vernon S. (Ozie) Waters, motion picture star and entertainer; Jacques Jaccard, Hollywood producer-writer-director, and William H. Schrader of Denver, business manager. The company has been incorporated with a $300,000 capitalization.

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Here's the full story of rust prevention in metal-working operations! Specially prepared chart shows the many production points where Oakite Special Protective Oil can be used to prevent rust by (1) floating-out creviced water from immersed parts; by (2) excluding moisture from finished parts. This illustrated folder also tells how to combat rust on parts and assemblies in storage, in temporary idleness, in transit. Facts on cleaning before anti-rusting; removing finger-marks; quick drying after anti-rusting, etc. Write!

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Timely Tips on Your Income Tax

By JAMES G. SMYTH
Collector of Internal Revenue
First California District

UNDER provisions of new Income Tax Laws passed by Congress last year the filing of income tax returns were made uniform throughout the United States. Of 1948 earnings all married couples have the privilege of filing joint returns and computing their tax liability separately.

This places the married couples residing in a non-community property State on an equal basis with those in a community property State.

It does not, however, prohibit the filing of separate returns. In some instances, residents of a community property State may benefit by this procedure. Especially is this true when losses from the sale of capital assets, such as stocks and bonds, exceeds $1,000.

For example: A married couple, in disposing of stocks, sustains a $4,000 loss. In filing a joint return, only a loss of $1,000 may be claimed; the balance must be carried over and taken on subsequent returns. If separate returns are filed by a married couple, each may claim a $1,000 loss, and the balance carried forward on next year's return. The sale of capital assets must be reported in Schedule D of Form 1040.

The Bureau of Internal Revenue permits business executives to deduct numerous expenses on their returns. These expenses must be limited to those which are ordinary and essential to the conduct of the business and which are directly attributable to it.

They are deductible only to the extent they were not reimbursed by your firm. In claiming business deductions it may be necessary to use a rider to explain such expenses.

Listed below is a reasonably complete list of expenses that may be incurred by business executives and which the Internal Revenue will allow:

Accident insurance while traveling, including train and plane travel policies; business printing, including Christmas cards for business purposes only, and the cost of mailing them to customers; dues and initiation fees to professional societies, and to athletic, fraternal, social and country clubs when your employer requires you to belong, or if you can prove that you belong solely for business contact or entertainment purposes; entertainment of customers to promote specific deals, and not just for general good will; commissions to agents; gifts for business promotion purposes; subscriptions to professional or technical journals, and the cost of books and magazines necessary to your business but not of permanent reference character.

Travel expenses incurred while away from home on a business trip, and not reimbursed by your employer, are deductible in computing your adjusted gross income. As generally understood, they include transportation, meals and lodging, as well as other incidental traveling expenses such as tips in reasonable amounts.

To obtain a deduction for this expense, certain rules must be followed. Attach a statement to your return showing the nature of your business, the number of days away from "home" during the taxable year on account of your business, the total amount spent for meals and lodging and the amount of "other expenses" incidental to travel and claimed as a deduction.

The word "home" as used in the Income Tax Law has been interpreted to mean a taxpayer's place of business. The individual is free to choose his residence. If a person lives in a place distant from that in which his business is located, any expense incident to traveling to and from his office, is not a business expense.

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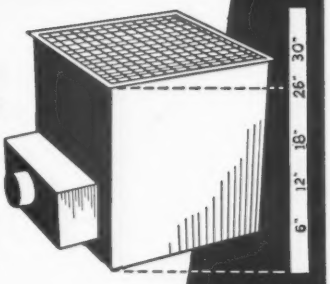

Desert-Air shallow floor furnaces are easily installed in homes without basements and are available either with or without automatic controls.

Either the 35,000 BTU or the 50,000 BTU model is ideal for small home installation or multiple installations in those hard-to-heat homes. This shallow floor furnace has everything . . . proved design, quality materials and workmanship, and of course A. G. A. approval. *Write for literature and our Dealer Plan.*

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Unique Insurance Plan Allows Early Retirement

A novel life insurance program that can be continued by the individual upon retirement — whether he is of retirement age or not — has been set up for employees of Standard Oil Co. of California and certain of its subsidiaries. Those now retiring before the normal retirement age (men, 65; women, 60) may continue the full amount. After normal retirement age they may continue to carry half the full amount.

Cost of this group insurance is borne by both the employee and the company. Benefits vary according to length of service, with 10-year employees entitled to a year's pay. Retired persons receive a year's annuity payments.

Underwriters of this $70,000,000 plan, one of the largest ever written in the West, are Pacific Mutual Life Insurance Company and Occidental Life Insurance Company of California.

Another Air Conference

A statewide conference on agricultural usage of aircraft will be held at the University of California Davis campus on Tuesday and Wednesday, February 8 and 9, under sponsorship of the California Aeronautics Commission and other interested agencies.

Engineering Mechanics

Stanford University has established a Division of Engineering Mechanics in its school of engineering, which will administer a graduate program and grant masters and doctoral degrees in engineering mechanics and also coordinate sponsored research in this field. Engineering mechanics, according to Dean Frederick E. Terman of the school of engineering, is synonymous with applied mechanics and is concerned with the strength, endurance, vibrational characteristics and susceptibility to buckling of engineering structures and mechanisms.

Fines and Jail Follow Oil Strike

As an aftermath of the CIO Oil Workers' International Union strikes, in a trial for contempt of a Superior Court order, the Rodeo, California, local of the union and nine members were ordered to pay a total of $1,675 in fines and also received combined jail sentences of 11 days.

The restraining order was issued during the recent oil strike, to curb massed picketing and to prevent violence. The incidents involved interference with trains and trucks and those responsible for the property. One of the men fined is both an officer of the union and a Richmond city councilman. The request for the restraining order originated with the Union Oil Co.

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A heading machine cutting sections from heated steel rods and compressing them in a die to a rough spherical shape.

The steel is carefully chosen and inspected, even before it gets to the heading machine. After being "born" here, balls are carefully "brought up," through a long series of grinding and lapping operations, to the unbelievably high standards of finish, sphericity and precision which have made Strom Metal Balls the standard of industry. Strom Steel Ball Co., 1850 South 54th Avenue, Cicero 50, Illinois. Pacific Coast Representative—Precision Bearings, Inc., 1706 S. Grand Ave., Los Angeles 15.

Strom BALLS Serve Industry

Largest Independent and Exclusive Metal Ball Manufacturer

Tank Trucks Facilitate Liquid Sugar Distribution

HOLLY Sugar Corporation has added liquid sugar to its list of commercial sugar products made and distributed in California.

The plant at Alvarado, pioneer beet sugar factory in the United States, was selected to make liquid sugars. The product is water-white and graded in content from pure sucrose to whatever percentage of invert is needed.

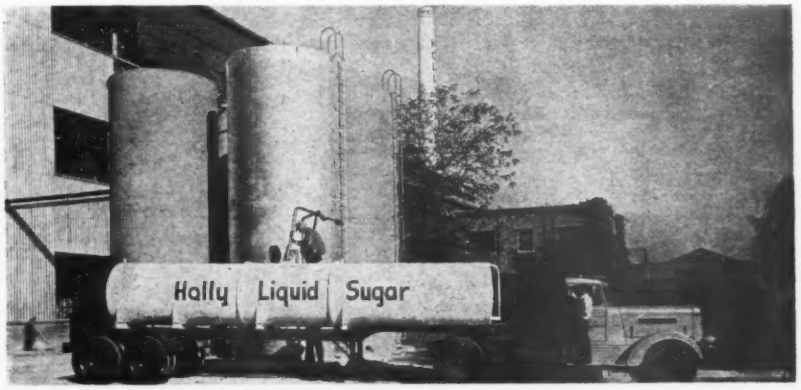
An extension to the three-story main building was completed recently and four tanks for the storage of liquid sugar were installed beside loading stage for both railroad tank cars and tank truck types of delivery.

The rail tank cars hold from 8,000 to 10,000 gallons. The especially constructed tank trucks will hold 3,500 gallons.

Walter Ziegler, Holly's Pacific Coast manager, points out that all surfaces which may come in contact with the liquid sugar are either glass-lined or are made of corrosion-resistant materials. All pipe lines of the new installations are of stainless steel with especially constructed fittings. In these fittings, there are no pockets or crevices; hence no chance for bacteria to accumulate and grow.

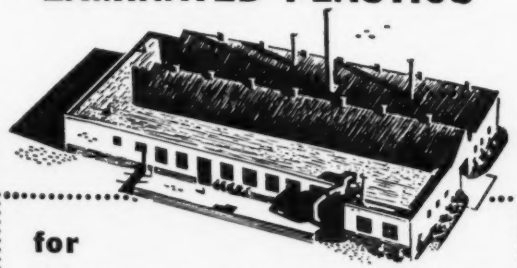
The stainless steel filters are said to be the first filters of this type on the Pacific Coast. As they are equipped with an automatic sluice mechanism for cleaning, they will not need to be opened except for inspection purposes.

"We have provided a flash cooling system for cooling the liquid sugar before it goes to the storage tanks," Mr. Ziegler said. "Again, all of this equipment is either stainless steel or is glass-lined. By thus cooling the liquid sugar, condensation within the storage tanks will be reduced to a minimum. The storage tanks are coated with special surfacing to prevent any contamination and, of course, so are truck tanks and rail cars. Another feature of interest is the installation inside of the storage tanks of a system of ultra-violet lamps whose rays preserve freedom from bacteria."



• One of Holly Sugar Corporation's 3500-gallon tank trucks for hauling liquid sugar.

LAMINATED PLASTICS



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Western manufacturers ONLY

This new Taylor Fibre plant at La Verne, California . . . the only one of its kind on the West Coast . . . is producing Laminated Plastics in quantity, for Western users only. Because this plant is so much closer to *your* plant, it can save valuable time in shipment . . . bringing you *on schedule delivery* of Phenol Fibre and Vulcanized Fibre, in sheets, rods, and tubes.

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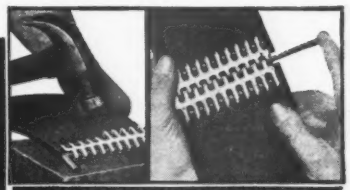
Distributed from warehouse stocks in Los Angeles, San Francisco, and Seattle by Tri-State Supply Corporation

BELT LACING and FASTENERS for transmission and conveyor belts



"JUST A HAMMER TO APPLY IT"

ALLIGATOR

Trade Mark Reg. U. S. Pat. Office

STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

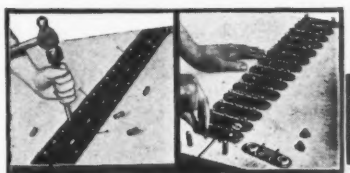
FLEXCO HD

BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere



"CONVEYOR BELTS EASILY FASTENED"

FLEXIBLE STEEL LACING CO.

4642 Lexington St.
Chicago 44, Ill.

Coast Fertilizer Industry Shows Rapid Growth

By DR. OLIVER E. OVERSETH
Executive Secretary and Manager
California Fertilizer Association

SPURRED on by the fact that consumption of commercial fertilizer on the West Coast has trebled since 1940 and doubled since the war, the fertilizer industry on the Coast has made rapid post-war strides in expanding its production facilities.

This increase in output, the eleven Western states having used 976,973 tons of commercial fertilizer and California alone having purchased and applied nearly 600,000 tons or about 61 per cent of the total, is reflected in the tremendous agricultural yield from the fertile soils having adequate water and favorable growing climatic conditions.

In the past three years, practically every fertilizer plant in California has undergone or is in the process of undergoing major expansion in production capacity. In California alone 14 new plants have been constructed, which greatly increases this state's total production capacity. Three of these new plants are located in central California, six in the northern Bay area, and five in southern California. These plants are as follows:

Northern Bay Area

Napa Fertilizer Co., Napa
J. P. Sloan & Co., Salinas
E. B. Stone & Son, Salinas
Chemical Fertilizer Co., Modesto
Ralston Purina, Santa Clara
C. H. Haas & Co., Ceres

Central California

Naco Fertilizer Co., Madera
Fresno Agricultural Co., Fresno
Mid-State Chemical Co., Lindsay

Southern California

International Fertilizer & Feed Co., Bakersfield
Growers Chemical Supply Co., Azusa
Soluble Plant Nutrients Co., Azusa
Universal Fertilizer Corp., Puente
Tank Fertilizer Co., Brawley

A number of plants have materially increased their production capacity through enlargement and improvement of mechanical facilities. These plants are as follows:

Best Fertilizer Co., Oakland
Inland Fertilizer Co., Los Angeles
Sunland Industries, Fresno
Swift & Co., Los Angeles

In addition to the pronounced expansion of production facilities for the mixing of fertilizer, there have appeared certain important developments in the manufacture of fertilizer materials for mixers. Permanente Metals Corporation, near San Jose, started production of a calcium-magnesium phosphate called Thermo-Phos, since the war. This material has been distributed throughout the state, especially in areas where the response from phosphates is pronounced. Stauffer Chemical Company have doubled the production capacity of their two plants located at Stege and Vernon to provide still larger supplies of super-phosphate for California growers. In northern California the Shell Chemical Company have approximately doubled their sulphate of ammonia capacity to take care of additional requirements of this important fertilizer material.

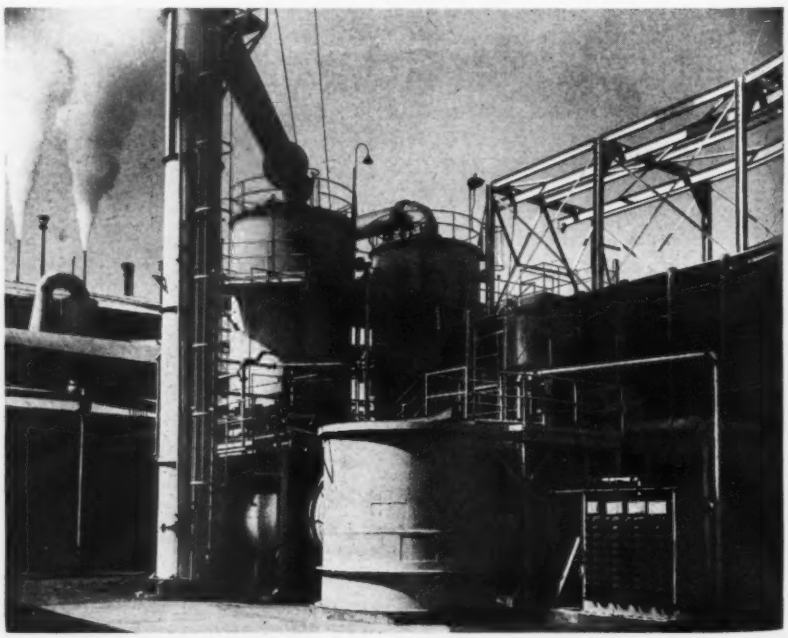
An estimate of the total production capacity of commercial fertilizers in California would exceed 1,000,000 tons annually. Unlike many other parts of our country, the California requirement for fertilizer is distributed fairly evenly throughout the year, which permits fertilizer manufacturers to operate continuously without large storage facilities. They are permitted to bring to the factory raw materials and sell them to the consumers directly as such, or compounded into mixtures for trucking direct to the field. Much of the raw materials reaches the factory by rail shipment and the finished material goes out by truck.

Factory equipment for mixing of fertilizer is manufactured almost entirely in the eastern part of the United States. Much of the equipment in the present fertilizer plants has either been ordered from the eastern manufacturers, or is make-shift equipment utilizing mixers, conveyors, hoppers, etc., manufactured primarily for other purposes.

There appears to be a field open for the manufacture of fertilizer equipment on the West Coast. Equipment in general need consists of rotary mixers of one-half or one ton capacity, hammer mill grinders, bagging equipment both for paper and jute bags, belt conveyors, storage hoppers, mechanical moving equipment such as Pay-Loaders, and automatic weighing machines.

One of the large eastern plant construction organizations claims that with efficient design of building and use of the latest

• Stauffer's $1,000,000 sulphuric acid plant at Stege, Calif., built to supply sulphuric acid used in making Superphosphate. Acid formerly shipped by tank from their Vernon plant.



developments in equipment, savings on labor costs will pay for the entire investment in four years. Many fertilizer manufacturers are in a rut as far as mechanization and modernization is concerned and have not kept up with other industries. The majority of existing old plants are using the same equipment and methods of operation that were used 20 years ago with few improvements.

Even with new plant construction on the West Coast there are still a large number of plants that should undergo further mechanization and modernization to become efficient and economic producers of all types of fertilizers. This necessity will become increasingly important as supply catches up with demand and the industry is placed on a highly competitive basis. The wise operator will be ready for this day with an efficient operating unit.

Training Program For Uranium Miners

The Colorado State Board of Vocational Education is considering the inauguration of a training program for miners and others engaged in the uranium and vanadium industry in the Colorado Plateau area. According to proposed plans, the program will be conducted by Mesa College.

An advisory committee has been established consisting of A. E. MacArthur, State Board of Vocational Education, chairman; Blair Burwell, Minerals Engineering Company; J. H. Latimer, American Smelting & Refining Company; H. J. Wubben, president of Mesa College; Herb Benson, Grand Junction Board of Education; J. W. Hill, U. S. Vanadium Corporation, all of Grand Junction, Colorado, and Dr. W. G. Fetzer and H. G. McGrath of the Atomic Energy Commission, and F. A. Sitton, Dove Creek, president of the Uranium-Vanadium Cooperative Association. It has been proposed that Lawrence Bennett, Uravan, and V. Bradford, Blanding, Utah, also be requested to serve on the committee representing the independent mine producers.

Idaho Phosphate Operations Speed Up

At the Simplot Fertilizer Plant location four miles west of Pocatello, additions almost doubling the acidulation plant's curing and shipping facilities are nearing completion. Originally constructed in 1944 with production of 40,000 tons of superphosphate per year, continued expansion has increased the capacity to 200,000 tons per year. Here the phosphate rock is pulverized, mixed with sulphuric acid and cured, producing superphosphate with a phosphoric acid availability of 18 per cent.

Phosphate rock mined at the open-pit mine at Gay, Idaho, 21 miles east of Fort Hall, is now moving in trainloads to the Simplot Fertilizer Company's plant at Don, a siding just west of Pocatello, which was named in honor of Don Simplot, a son of Mr. and Mrs. J. R. Simplot.

Phosphatic shale from the Simplot mine at Gay is also to be moved by the Union Pacific on an expanded and expedited all-rail haul to the Westvaco Electric Furnace installation of the Westvaco Chemical Division of the Food Machinery & Chemical Corporation near Don. This electric furnace plant for the production of elemental phosphorus is now being constructed on property adjacent to the Simplot Fertilizer Company Plant. Production of elemental phosphorus is scheduled for late spring, 1949. In addition to shale, coke, another necessary raw material will be shipped from Geneva, Utah, to the elemental phosphorus plant now under construction.

At first, the elemental phosphorus manufactured at the new plant will be shipped via Union Pacific to Westvaco at Carteret, N. J., for conversion to sodium phosphate and related products. Later, similar products may be manufactured in the West.

The new plant is variously estimated to cost $3,500,000 to $4,000,000 for the first unit of one large electric furnace. Present plans call for up to four such furnaces eventually. Westvaco has contracted for a large block of electric power from the Idaho Power Company.

Play Safe With Shell

The Wilmington - Dominguez refinery of Shell Oil Company has been awarded the National Safety Council's "Distinguished Service to Safety Award" for 1947-1948. Together with Shell's Martinez refinery, the plants were the first refineries in the United States to win the award. They were the first ever to receive the award a second time, and now they are the first refineries in history to receive the award a third time.

Committees Chosen For Metal Congress

Final committee appointments for the coming Western Metal Congress and Exposition at Los Angeles, April 11-15, are as follows:

The general committee is headed by E. R. Babylon, the Kaiser Company; with two vice-chairmen, James B. Morey, International Nickel, and S. R. Kallenbaugh, Timken Roller Bearing Company, and W. J. Parsons, Pacific Scientific Co., as secretary.

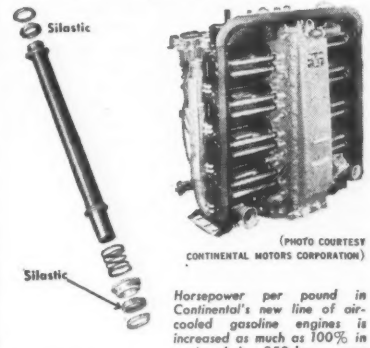
Nine ASM chapter chairmen will assist, as follows; Stuart C. Gillespie, Pacific Metal Co., Seattle, Puget Sound Chapter; C. R. St. John, Permanente Metals Corp., Spokane, Inland Empire Chapter; B. L. Berlien, Industrial Steel Treating Co., Oakland, Golden Gate Chapter; R. J. A. Fricker, Dominion Bridge Co., Vancouver, British Columbia Chapter; Raymond C. Aungst, Oregon Brass Works, Portland, Oregon Chapter; H. E. Fryer, Carnegie-Illinois Steel Corp., Denver, Rocky Mountain Chapter; Earl Kops, Kops Engineering Service, San Diego, San Diego Chapter; Winfred C. Dyer, Utah Chapter.

Silicone News

DC SILICONES

More Power Per Pound†

Call it plain laziness or call it "divine discontent", some potent force has driven us to seek more concentrated motive power ever since man started to move on wheels. But each increase in horsepower per pound has increased operating temperatures and created a need for more heat resistant materials. Dow Corning Silicones help to supply that need in such major developments as the new air-cooled gasoline engine by Continental Motors Corporation of Detroit.



(PHOTO COURTESY CONTINENTAL MOTORS CORPORATION)

Horsepower per pound in Continental's new line of air-cooled gasoline engines is increased as much as 100% in engines below 250 hp . . . more than 300% (down from 2400 to 777 lbs.) in the horizontally opposed 8 cylinder 250 hp engine shown above. In this type of engine, Silastic gaskets are essential parts of the standard push-rod and tube assembly.*

Among the many problems solved by Continental engineers in designing this compact power plant, was the leakage of oil around the push-rod tube assembly. Hot oil and operating temperatures up to 500° F. severely limited the life of conventional gasketing materials. Continental engineers, however, knew about Silastic, the rubber-like Silicone by Dow Corning, and they asked for samples and technical assistance.

Silastic solved this problem because it is more heat-stable and more resistant to hot oils and to permanent deformation at temperatures above 200° F. than any other resilient material. Use of engines in sub-zero weather is not restricted by these gaskets of Silastic 161 because they are serviceable from —90° to 500° F. For more information about Silastic, ask for data sheet No. F-5X.

†See Silicone News, Dec. 1947, for story on 50% reduction in size and weight of electric motors made possible by Dow Corning Silicone Insulation.

*TRADE MARK REGISTERED U. S. PAT. OFF.

DOW CORNING CORPORATION
MIDLAND, MICHIGAN

Atlanta • Chicago • Cleveland • Dallas
Los Angeles • New York
In Canada: Fiberglas Canada, Ltd., Toronto
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Dow Corning
FIRST IN SILICONES

WESTERN TRADE WINDS

NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

Edward P. Atcherley has been appointed as northwest division manager of renewal tube sales for Sylvania Electric Products, Inc. He will take charge of sales of renewal radio and television tubes, test equipment and electronic products to Sylvania distributors in Montana, Idaho, Oregon, and Washington. He was formerly associated with the Tide Water Oil Company, Shell Oil Company, R. M. Hollingshead Corporation and The Paraffine Companies.

Clifford W. Lord has been elected vice-president in charge of all Pacific Coast warehouses, including two newly added facilities at Portland, Ore., and Seattle, Wash. Previously he was district manager of the Los Angeles and San Francisco warehouses. **Paul C. Van Cleave** and **Frank B. Stewart** have now been appointed district managers of the Los Angeles and San Francisco warehouses, respectively.

L. R. Burnester is now representative for the San Francisco territory for Janette Manufacturing Company of Chicago, manufacturers of gear-motors and other products. His headquarters will be at 546 Howard Street, San Francisco, care Monarch Supply Co.

The J. C. Richards Company of Los Angeles have been appointed sales agents for General Switch Corporation of Brooklyn, N. Y. The Richards Company will service electrical wholesalers in southern California from their offices and warehouse in Los Angeles where inventory will be maintained. Products handled will be enclosed safety switches, service entrance equipment, branch-circuit or residence panels, panelboards for light and power distribution and wireways and fittings for the electrical trade.

Dalmo Victor Company, Inc., of San Carlos, Calif., have retained **C. J. Burnside**, veteran radio engineer and executive, as a general industrial consultant.

J. H. Burrus has been promoted from assistant manager to manager of the Allis-Chalmers Portland district, succeeding **F. V. Sams**, retired. He has been manager of the company's Portland district since 1935. Mr. Burrus, who has been with Allis-Chalmers since 1937 following his graduation as an electrical engineer from Texas A & M College, has been assistant district manager at Portland since April 30, 1947. **William F. Snyder**, district superintendent of service and erection with Allis-Chalmers San Francisco office since 1924, has retired after 40 years with the company.

Owen F. Johnson named vice-president of Soundwriting, Inc., in charge of sales and service of Audiograph electronic soundwriter with regional offices in San Francisco. Territory includes northern California, Nevada, Oregon, Washington, Montana, and Idaho.

Allen S. Baker, formerly with Lockheed Aircraft Corporation, has formed a consulting engineering service with headquarters at 583 N. Cahuenga Boulevard, Los Angeles. Currently Baker's firm is specializing in design, construction and production problems encountered in non-metallic fluid tanks, including bladder cell and self-sealing types. Sealing for weatherproofing and pressurization also will be covered.

A new building to house the Los Angeles area retail sales and service organization for Hyster industrial trucks has been opened at 5301 Pacific Blvd., Huntington Park. The reinforced concrete structure covers 7,500 sq. ft., including a large showroom, a parts and service department, and several offices. Formerly located at 2700 S. Santa Fe Avenue in Vernon, operations with a staff of 15 people are under the management of **L. W. (Jack) Barclay.** Sales personnel includes: **Harold Berg, Warren Burman, Victor Hunt,** and **Donald Imhoff.**

Smoot-Holman Co., Inglewood, Calif., manufacturers of industrial and commercial lighting equipment, announce the appointment of **Merle A. Potter** to the post of director of distributor relations in the Los Angeles area. Mr. Potter, through his former position as assistant manager of the Standard Wholesale Electric Co., Los Angeles, is well known to the industry.

The Electron Equipment Corporation of South Pasadena, Calif., announced the appointment of **Industrial Associates, Inc.,** of Beverly Hills, Calif. The Electron Equipment Corp. is the only manufacturer in the West producing an extensive line of electronic motor controls and electronic rectifiers.

The H. K. Ferguson Company, industrial engineers and builders, have established a new Western district office in Los Angeles at 712 Curson St., at Wilshire Blvd. It will be managed by **Henry Maag,** for many years a contract engineer with the Ferguson Company.

J. A. Handin now sales representative for Hammond Manufacturing Corp., Huntington Park.

De Leuw, Cather & Company, consulting engineers, establish a Western office in San Francisco. **Henry K. Evans** and **Gustav E. J. Jamart,** staff engineers, are the Western representatives. The firm has just finished a year's survey and report on a transportation plan for San Francisco.

William H. Walker named West Coast representative of J. W. Greer Co., confectionery and food industries machinery.

Larry Menge, who won the salesmen's contest in the Thaler Pipe and Supply Co. of Oakland last summer, and thereby got an eastern airplane trip and vacation for himself and wife with all expenses paid, has been named assistant sales manager of the company. Previous to joining Thaler four years ago he was manager of the expediting department at Pacific Bridge, and before that with Walworth and Apex Bronze.

C. Lee Emerson has been appointed manager of rolled steel sales for Kaiser Steel, with offices at 1924 Broadway, Oakland. Prior to this promotion he served in the capacity of assistant district sales manager for the southern California area, with offices in Los Angeles, and in wartime was with the Kaiser Richmond shipyards.

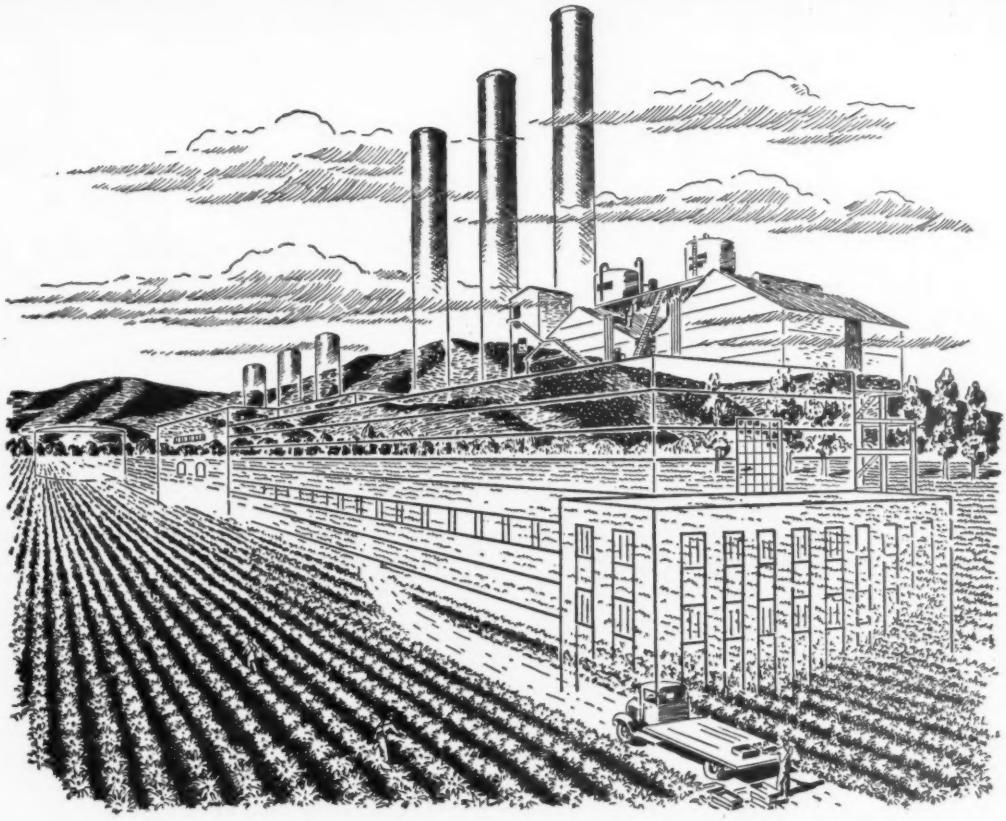
Tayler & Spotswood Co., San Francisco, announce the appointment of **E. G. "Pete" Bergren** as general manager of their organization. He had been manager of the steel and purchasing divisions. **John D. Smart,** manager of the tubular division, has been appointed to fill the position of manager of purchases, and **William C. Tagmyer** succeeds him as manager of the tubular division.

Harry Rorick has been appointed sales manager for the Ray T. Ebert Company, 840 Seward St., Los Angeles, Western states distributors for Jiffy Insulated Bags and industrial packaging products. Mr. Rorick has been director of advertising and public relations for Turco Products, Inc., for the last eight years.

Office and warehousing facilities in Fresno of the **Drake Steel Supply Company** of Los Angeles have been enlarged by additions approximating $50,000 in cost. The new warehouse adds approximately 6,600 square feet of storage, purchase of an additional acre of land materially increases outside storage, and office space has been doubled. These additional service facilities shown below with part of the truck fleet, enable the San Joaquin Valley territory to have a wider selection of steel, wire and tubular products, with even faster deliveries than before. **A. H. Weinert,** president of Drake Steel Supply, reports that the expansion program was made necessary by the phenomenal growth of industries in the San Joaquin Valley.

Steelcraft Manufacturing Company appoints **Eaton Metal Products Co.** of Denver, distributor of the firm's standardized metal buildings in Colorado, Wyoming, New Mexico, and Montana.

P. G. and E.'s biggest steam plant now under way

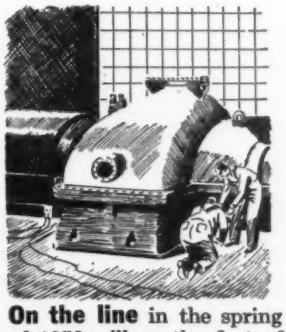


A 280-acre vegetable farm near Moss Landing on Monterey Bay soon will be producing the greatest crop of power in P. G. and E. history for Northern and Central California.

For here is being built the company's largest steam plant, a 402,000-horsepower giant whose electric output will contribute to P. G. and E.'s entire interconnected system.

This is the ninth major producing unit begun since V-J Day to serve the growing demand for power in California. Four already have been completed, and still others are planned.

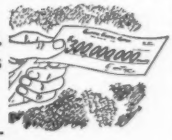
1,500 workmen will be on this job when construction reaches its peak, and a good share of the $51,500,000 estimated cost of the project will be in payroll, which in turn will pass on to local business.



On the line in the spring of 1950 will go the first of three 134,000-horsepower generators; the others are scheduled for the following year. Preliminary work already is going full speed ahead.

for the record

The plant's huge boilers will be fired by oil shipped in by both sea and rail.



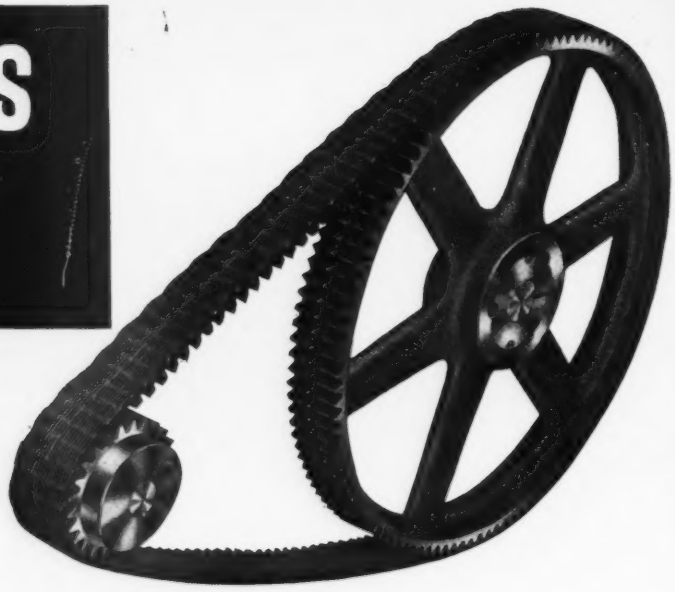
P. G. and E. already has invested $300,000,000 in postwar power facilities.

Half a million new horsepower are already at work for Northern and Central California.

P·G·and E· PACIFIC GAS AND ELECTRIC COMPANY

WI-102-249

ENDLESS STORY

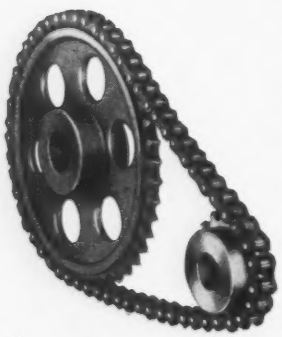


Morse Silent Chain Drives

THE STORY of Morse Silent Chain Drives is an endless one of efficiency, low cost and positive power transmission.

Perhaps the most effective known means of transmitting power between shafts, Morse Silent Chain is quiet, smooth, and dependable. Considered by engineers as flexible gearing, it has been used to transmit 5000 h.p. in a single drive; speeds have sometimes exceeded 8000 FPM. At high velocities, Morse Silent Chain Drives utilize centrifugal force to distribute driving effort over a greater number of teeth, reducing impact, wear, and noise.

Part of the story of the operating economy and long life of Morse Silent Chain Drives is found in the famous frictionless rocker joint. Employing essentially a simple rocking-chair action, Morse Silent Chain contact is confined to rolling instead of sliding action. Less heat is developed, enabling the drive to transmit heavy loads at high speeds without overheating.

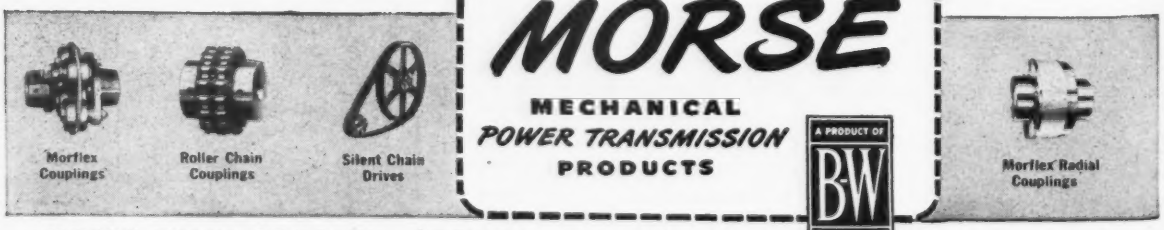


Simple to connect or disconnect, Morse Silent Chains can be installed or removed without dismantling machines on which they are used. Chain length is easily and quickly adjusted for any center distance, and speed ratio changes can be readily accomplished. The initial cost of Morse Silent Chain Drives is surprisingly low, and their high efficiency and frictionless joint design assures the lowest operating cost per hour and low maintenance outlay.

Why not check the Morse Silent Chain story more completely? Write for catalog C71-48. Morse Chain Company, Dept. 297, Detroit 8, Michigan.

★ ★ ★

Morse Roller Chain Drives • A low-cost, positive, efficient, flexible drive for use under rigorous operating conditions, Morse Standard Roller Chain is applicable to a wide range of installations and is available in all American Standard pitches and widths.



MORSE CHAIN COMPANY • DETROIT 8, MICHIGAN

Mechanical KINKS

By W. F. SCHAPHORST, M.E.
Former Engineering Instructor
New Mexico State College

Boiler Scale and Feed Water

It may not seem possible to some readers, but this writer saw an article not so long ago entitled, "Eliminated Boiler Scale by Regulation of Feed Water." The article appeared in a rather prominent journal, the name of which the writer believes he had better not mention here. The error was called to the attention of the editor of the journal but the editor appeared to become "peeved" about it. Evidently when an error is committeed in that journal it must stand. The writer has had considerable experience with editors of that kind — the I-never-make-a-mistake variety.

The sole function of a boiler feed water regulator is to maintain the water level at its proper height at all times. There are several excellent types of automatic regulators on the market — all the way from the type that has no moving parts whatever to types that do have moving parts.

In order to eliminate boiler scale something more than a feed water regulator is needed. A feed water heater is often helpful to some extent but heaters do not always eliminate all scale. The best way, according to modern scientists, is to treat the feed water outside of the boiler either by means of chemicals or by preheating so that the scale will be precipitated and removed from the water outside of the boiler. This, to be sure, cannot be accomplished by a boiler feed water regulator.

Boiler Baffle Pointers

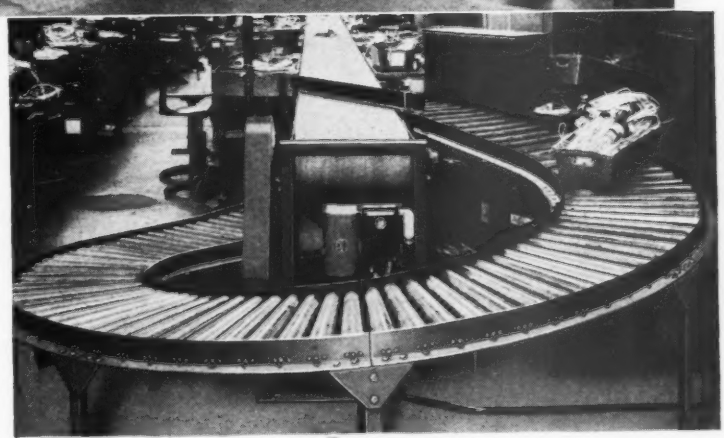
An important subject that is not mentioned with sufficient frequency in connection with steam boilers is the baffle wall. To many operators the baffle is just an insignificant part of the boiler and is worthy of but slight consideration. That, however, is wrong. Baffles should be correctly designed, correctly placed in the tube banks, and they should be leakless. Tests have proved that baffles cannot be placed haphazardly here and there as was done in the "old days" without impairing operation and efficiency.

The volume of the hottest gases usually determines the position of the first baffle to be encountered. Then, as the gases reduce in volume, due to coming in contact with the tubes and giving off heat, it is clear that the second baffle must be so placed that there will be no reduction in gas velocity. Then as the gas moves from pass to pass the baffles are placed closer and closer together in strict conformity with gas shrinkage laws.

(Continued on page 92)

CONVEYORS LIKE THIS → WON'T CUT YOUR COSTS

Looking for a way to get material from one part of your plant to another . . . you wouldn't consider the burro as the best answer. The real answer to fast, economical material handling is Standard Conveyors —a system, a section or a portable powered unit. Standard Conveyors are built for almost every material handling need, from mail to malleable iron castings. Look over your shop or warehouse, there's more than an even chance you can save time, money and labor with a Standard Conveyor. Standard Conveyor Company, General Offices: North St. Paul 9, Minn., Sales and Service in Principal Cities.



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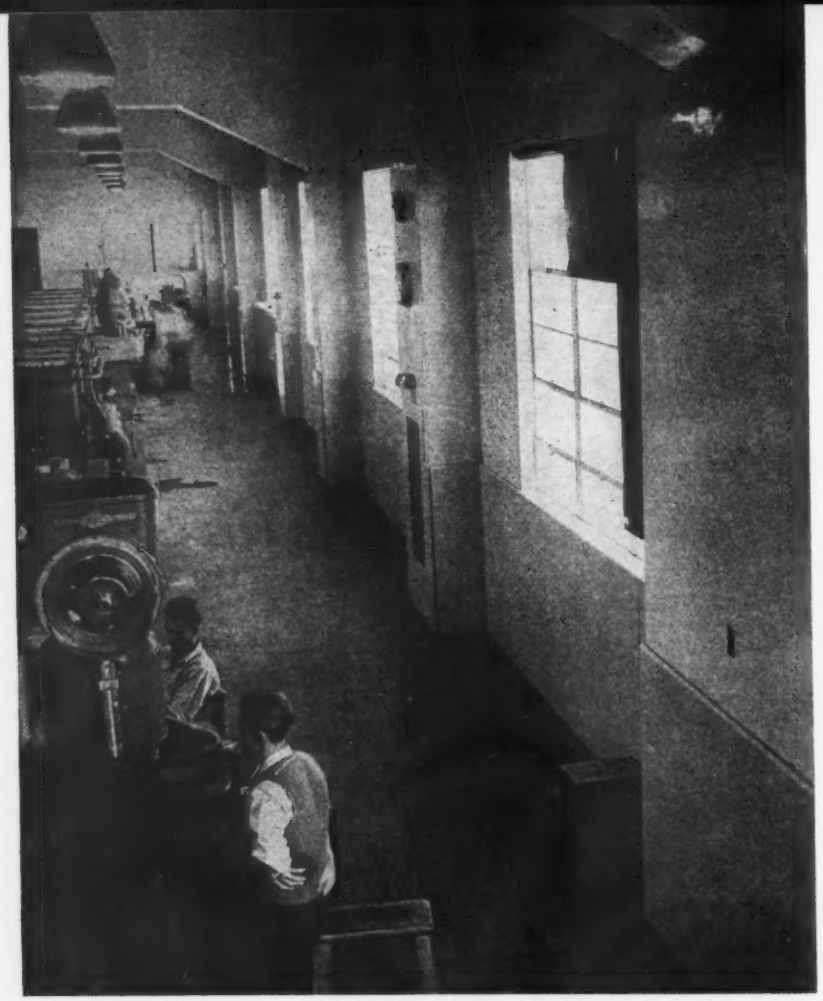

• Los Angeles Brewing Company's new tile walls (shown above) sparkle with sanitation.

Tile Keeps Plant Clean

ENOUGH ceramic tile to more than blanket a football field was involved in the 1948 expansion program of the Los Angeles Brewing Co. The plant is being remodeled and enlarged and a new adjoining brewery will be built for Pabst Brewing Co., who have acquired the former concern.

A total of 6,770 square feet of wall tile, 45,400 feet of quarry tile and 2,300 square feet of mosaic tile have been installed in the new buildings of the L. A. brewery. The 150x268 bottling room employs the most extensive use of ceramic tile of any similar West Coast structure, with green glazed wall tile to a height of five feet three inches and more than 22,000 square feet of quarry tile covering the floor on all walking surfaces.

The new Pabst plant will be on the site of the original L. A. Brewing plant, which is to be razed. It will cost in the neighborhood of $6,000,000 with more than 500,000 square feet of floor space.

Upwards of $3,500,000 already has been spent on the L. A. Brewing plant and further expansion calls for expenditure of an additional $1,000,000. Capacity is now 5,000 bottles an hour, utilizing a power-driven conveyor system three miles long, with four bottler lines, 24 bottles wide and each with 60-spout fillers.

Liquid Carbonic are supplying the bottling equipment, P & E Tile Co. have the tile sub-contract, Stanton Reed Co. were general contractors and Lewellyn A. Parker the architect.

(Continued from page 91)

Should the baffles become leaky because of loose or careless construction, the hot gases will "short cut" through the baffles and escape up the chimney without giving up their full quota of heat. The chimney gases will then be too hot. Holes in baffles should be stopped up with a good grade of plastic refractory material. Or, where the baffle is in a tumble-down condition it is better to replace the entire baffle with a new one of plastic composition with corrugated metal or tile separators between the layers.

These separators furnish positive expansion joints, and at the same time they do not permit leakage of valuable hot gases.

Damper Regulators

We are so accustomed to damper regulators—even on stoves and furnaces in our homes—that we don't bother to give them much thought. At least, this writer was pretty well along in years before he asked himself, "What is a damper regulator really for?"

Briefly, as the writer now sees it, the function of a damper regulator on the steam boiler furnace, is principally to diminish or increase the total flow of properly proportioned air. The most logical place for this is in the breeching or uptake—not at the entrance to the fuel bed. Besides, if placed at the entrance it could hardly be called a "damper" regulator.

Also, if placed at the entrance to the fuel bed it would be necessary to proportion both the primary and secondary air simultaneously which would be a rather difficult thing for a single instrument to do. It is much simpler to control the gases all in one duct after they are combined.

The function of a chimney, where forced or induced draft fans are not used, is to supply by natural suction enough air for complete combustion, and, at the same time, it must carry away the burned gases. A chimney is, or should be, so proportioned as to be capable of giving sufficient draft to cause the boiler to develop considerably more than its rated power in case of emergencies.

This means that for a normal boiler load most chimneys are from 50 to 100 per cent oversize, and even more. Hence, unless automatic means are employed to reduce or properly proportion the pulling power of the chimney by operating a damper, from 50 to 100 per cent more air must be fed to the fire than is required.

The result is, of course, that the excess air becomes a burden to the furnace, and must be heated up to the temperature of the furnace. Then it is emptied into the atmosphere at a high temperature, causing a considerable loss of fuel. Or, so much excess air is drawn into the furnace that the furnace temperature in certain parts is cooled below the temperature of ignition, resulting in the escape of unburned gases up the chimney. This loss may be even greater than the first loss mentioned in this paragraph.

Damper regulators therefore do play a prominent part in boiler operation. A good damper regulator, costing hundreds of dollars, will usually save its own cost several times in its first year of use. So, next time you install a damper regulator in your plant make sure it is a *good* one. And if, perchance, your present damper regulator could be improved, it might be worthwhile to give more thought to this subject. It is well known that most chimneys are wasteful. In many instances much of that waste can be very much reduced.

Erroneous Statement Corrected

I have before me a printed publication in which this statement is made concerning boiler tubes passing through baffle walls: "Every tube is gas tight, under tempera- up to 3300 deg. Fahr."

Having read similar erroneous statements before, and believing that the authors did not make the misstatements wilfully, I dare say that corrective comments on the subject will be welcomed by the authors as well as by readers. In other words, I am going to try to "straighten things out."

Boiler tubes passing through boiler baffles are always comparatively cool. They are never as hot as 3,000 deg. Fahr., nor 2000 degrees, nor even 1500 degrees. I have before me a steam table published by a manufacturer of superheaters which shows that even where the steam pressure is 3300 pounds per square inch the temperature of the steam is only 705 degrees Fahr., and under no circumstances do they advocate superheat of more than 300 degrees, making the maximum possible steam temperature about 1000 deg. Fahr.

At the same time it must be remembered that superheaters are seldom baffled. Superheaters are seldom "touched" by the baffle walls. The baffle walls make contact with tubes that are always cooler than 1000 deg. F. In fact, as already stated, the water in the hottest tubes will never have a higher temperature than 705 deg. Fahr. That is why I call the tubes "cool" as compared with the temperature in the furnace. Certainly these comparatively cool tubes will never permit the temperature of the baffle to reach 3300 deg. Fahr.

In actual practice it has been found that boiler baffles do not give trouble due to high temperature. They do give trouble due to the expansion and contraction of tubes, which action causes cracking and consequent leakage of the valuable hot gases through the cracks, permitting those gases to short circuit into the stack.

It has also been found that it pays to provide expansion joints in boiler baffle walls for the same reason that expansion joints are provided in sidewalks, in railroads, in steel bridges and in pipe lines, etc. Expansion joints permit the tubes to expand and contract without causing cracking and breaking of the baffle walls and without resultant heat and fuel loss.

Nevada Mining Boosted By Demand For Metals

Extensive exploration-development work in the Nevada mining areas is being encouraged by a strong demand for base metals and is building a good market for Los Angeles manufacturers and distributors of machinery, the Los Angeles Chamber of Commerce reported, after a survey of Nevada mines.

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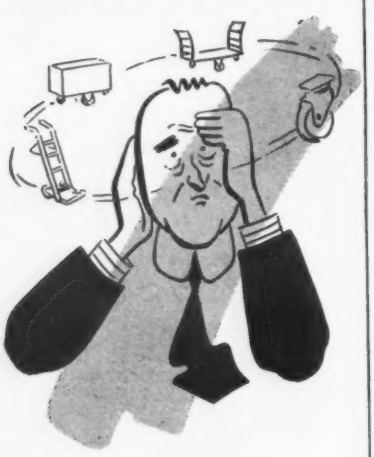

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Junior College Technician Training

To assist the California state educational authorities in establishing junior college courses in the field of engineering, an Advisory Committee on Technical Education has been set up. These courses are not primarily intended for preparation for professional engineering schools, but rather to serve the needs of industry directly.

Ward H. Austin of Marin College is chairman of the committee, E. W. Morris of Westinghouse, Los Angeles, vice-chairman, and E. P. Rodes, of the University of California office of relations with schools, secretary. A sub-committee on industrial needs is headed by Walter Kassebohm, manager of Moore Machinery Co., San Francisco, and the other members are Mr. Morris, Mr. Rodes, Edward B. Heath of San Bernardino Valley College and C. E. Knott of California Polytechnic College, San Luis Obispo.

Many industrial positions can be filled more efficiently by graduates of a junior college technical curriculum than by professional engineering graduates, according to Walter Kassebohm, and E. W. Morris reports that Westinghouse could use 25 such men each year in its field service work alone.

Instead of continuing to place vast numbers of graduates in positions which require only junior college technical training, says L. M. K. Boelter, dean of the college of engineering at UCLA, our colleges of engineering could shift their emphasis to many new areas of engineering that have not yet been adequately manned. The University of California recognizes, according to Mr. Boelter, that industry uses many more employees at the technician level than at the professional engineer level, but has difficulty at present in finding adequate technical junior college programs into which qualified students can be guided.

Rains Wood Metal Packing Co., Spokane, makes the only pump packing using wood granules as lubrication reservoirs. Distribution is worldwide. Mrs. A. E. Rains, owner-operator, is shown (above) with M. R. Makamson, San Francisco representative.

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The closing date for the MATERIALS HANDLING ISSUE of Western Industry is April 5

You will profit by an aggressive representation of your company in this information-packed number! The sustained reader interest that WESTERN INDUSTRY enjoys (inquiries from our December issue are still coming in, and it was published in November, 1948) is your assurance that your advertising will receive continual presentation to nearly 9,000 top-flight plant executives in the 11 Western states, *over a period of many months.*

This is the opportunity for which many wise advertisers set aside special advertising funds—an opportunity to get additional coverage of one of the most active materials handling markets in the country. Advertising in this number should be a *must* for every materials handling manufacturer and distributor serving the 11 Western states sales area.

You have seen the traditionally good editorial job being done in WESTERN INDUSTRY, and also the superlatively fine work featured by our Editorial Staff in the January Annual Review and Forecast issue, so you know what to expect in our May, 1949 MATERIALS HANDLING issue.

We want to position your advertising where it will do *you* the most good. But, to do so, we must have an early reservation for space. *There's no time to lose.* Air mail or wire your reservation, today, giving us the size of space, second color, position requested, and when material will be shipped. Remember the closing date for our first forms is April 5.

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"Come on in, the water's fine!"

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New Industrial Films And Film Strips

Title: "The One-Man Gang."
Subject matter: Economical mass handling of materials in typical large manufacturing concerns.
Length: 30 minutes.
Supplementary information: 20-page booklet available to present to everyone attending a showing.
From whom available: Towmotor Corporation, 1126 East 152d St., Cleveland 10, Ohio.

Title: "It Must Be Somewhere."
Subject matter: Vital importance of simplified efficient filing methods.
Length: 30 minutes.
Supplementary information: 8-page booklet available showing scenes from the film. Services of operator and projection equipment available.
From whom available: Any Remington Rand branch office, or Systems Division, Remington Rand Co., 315 Fourth Ave., New York 10.

Title: "The Story of West Coast Lumber."
Subject matter: Douglas fir, from tree farms to America's homes.
Length: (Filmstrip).
Supplementary information: Prints available to schools, organizations and clubs.
From whom available: Mr. Roberts, West Coast Lumbermen's Association, 1410 S. W. Morrison Street, Portland 5, Oregon.

Title: "Precision Investment Casting."
Subject matter: Step-by-step picture story of precision investment casting process.
Length: About 12 minutes.
Supplementary information: 16 mm. sound film in color taken in Allis-Chalmers foundry.
From whom available: Allis-Chalmers Mfg. Co., Advertising and Industrial Press Dept., General Machinery Div., Milwaukee 1, Wis.

Title: "Records That Control Quality Control" and "A Game of Chance."
Subject matter: How use of a record control system reduced scrap rejects 23 per cent.
Length: 35 minutes.
Supplementary information: Two films shown together by representatives of Standard Register Company.
From whom available: The Standard Register Company, Dayton 1, Ohio.
Title: "Look, Listen and Live."
Subject matter: Prevention of highway grade crossing accidents, featuring a staged train wreck.
Length: 26 minutes.
Supplementary information: 12-page cartoon-illustrated booklet distributed at film showing.
From whom available: William G. Murphy, Director of Public Relations, Union Pacific Railroad, Omaha, Nebraska.

Title: "Jet Propulsion."
Subject matter: Basic principles of jet propulsion explained through animated pictures of engine in operation and photographs of jet-propelled Shooting Star in action.
Length: 15 minutes.
Supplementary information: Film loaned free, but exhibitor pays shipping charges.
From whom available: For information write J. C. Gibson, Visual Education Division, Apparatus Dept., General Electric Company, Schenectady, New York.

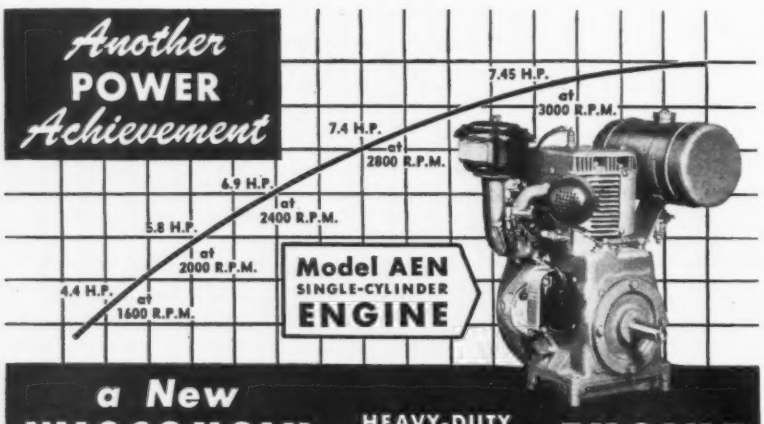
Title: "Building the B-29."
Subject matter: Boeing Aircraft's use of fork trucks and towing tractors in their Seattle plant during and since World War II.
Length: 27 minutes.
Supplementary information: Black and white, sound projection only.
From whom available: Advertising Department, Clark Equipment Company, Battle Creek, Michigan.

Film subject: Electrostatic paint spraying installations on actual production lines.
Length: 17 minutes.
Supplementary information: 16 mm., technicolor, sound film.
From whom available: Ransburg Electro-Coating Corp., 1234 Barth Avenue, Indianapolis 7, Indiana.

Title: "Indian Paint."
Subject matter: Making of wire rope from ore to finished product.
Length: 35 minutes.
Supplementary information: Four color sound film.
From whom available: The Colorado Fuel and Iron Corporation, Wickwire Spencer Steel Division, Palmer, Massachusetts.

Title: "Grinding and Use of Basic Lathe Tool Cutter Bits."
Subject matter: Various steps necessary in grinding and using cutter bits for lathe operations.
Length: 20 minutes.
Supplementary information: 16 mm. full color with sound track.
From whom available: South Bend Lathe Works, 340 East Madison Street, South Bend 22, Indiana.

Title: "Glacier Park and the Canadian Rockies."
Subject matter: Flight-seeing trip to Glacier National Park, Banff, Lake Louise, Jasper, Waterton Lakes, Calgary Stampede (the last, a rodeo).
Length: 30 minutes.
Supplementary information: 16 mm. color sound movie.
From whom available: Any Western Air Lines office or by writing Western Air Lines' general sales manager, 6060 Avion Drive, Municipal Airport, Los Angeles 45, Calif.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OPPORTUNITY SECTION

Cellulose Usage In West Increases

Cellulose derivatives, almost 100 per cent being nitrocellulose in 1936 and still at least 95 per cent of this material in 1946, have continued to increase on the West Coast, although nationally there has been approximately a 13 per cent decrease in lacquer sales, according to census figures for 1941 and 1946.

This is the report of M. W. Reece and H. L. Wampner of Reichhold Chemicals, Inc. Two factors contribute to this local opposition to the national trend, the Reichhold men say. First, there has been a very large increase in small manufacturing in the postwar period and fast-drying finishes without baking were required. Second, exports of lacquers and thinners have been reported as unusually large.

"There are some indications that the peak in lacquer production on the West Coast was reached in 1946, but only a further study at a later date will establish this."

Another fact brought out by their study of national census figures is the very large increase in plastic water paints compared to other protein coating. The explanation given is the greatly accelerated house building program and the big use of wall board as a material, the joints of such boards being made smooth and indistinguishable from the solid board by the use of plastic water points and joint fillers. The increase on the West Coast is reported greater than the national figure.

Small Manufacturers Group Is Active

Cooperative sales efforts of the members of Western Manufacturers, Associated, now provide that members on their sales calls leave equipment lists for all WMA plants in addition to their own, it was reported at a year-end annual dinner meeting in Los Angeles.

It was also reported by Fred Trickett of Mayvill Gear Manufacturing Company, first vice-president of WMA, that to facilitate bidding by members on prime government contracts, bid invitations are sent for by the Association and are made available for membership inspection at WMA headquarters, 1452 N. Seward St., Los Angeles.

Firms new to the Los Angeles industrial scene are to be contacted for sub-contract work as part of the 1949 sales program, according to Martin Lovequist of Lovequist Engineering Company, president of WMA. Facilities of the group will be made available for manufacturing under license for local supply, consumer and industrial items now being shipped into the Los Angeles area from the east.

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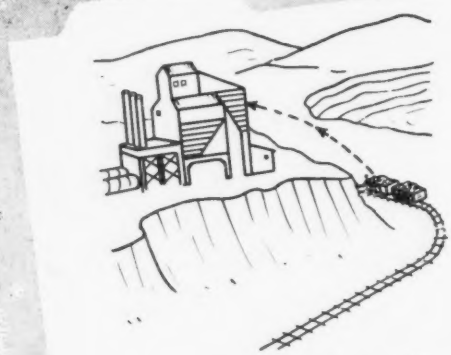
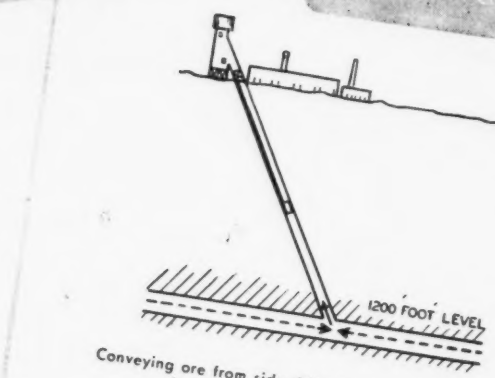


Moving ore from cars to plant, and moving wet ore from storage bins to drying process.



Conveying ore from side drifts in mine and elevating it from 1200-ft. level to surface.

—From the files, here are a few of the many jobs successfully engineered and equipped by S-A

Transporting ore from open-pit mine to plant, then moving it to storage and to cars.

When you sit down with the S-A engineer to study out a bulk materials handling problem, you and he are able to select the *best* system to do the job at lowest cost per ton. He doesn't have to solve every problem with just a few types of equipment. For S-A has the *complete line* of belt conveyors, bucket elevators, enclosed conveyors, skip hoists and other equipment designed for moving materials in bulk.

Add to this the know-how gained in 47 years—and you'll see why S-A is in a uniquely selective position to aid you. The first step in planning the most efficient and workable low-cost material handling system is this: Write us for the willing cooperation of an S-A engineer in matching specific units to your specific requirements.

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